

GenCore version 5.1.6  
Copyright (c) 1993 - 2003 Compugen Ltd.

OM protein - protein search, using sw model

Run on: September 12, 2003, 10:30:42 : Search time 30 Seconds

(without alignments)  
32.438 Million cell updates/sec

Title: US-09-579-420B-1\_COPY\_22\_44

Perfect score: 129

Sequence: 1 CSCKNTDSRCKARQLEINERTCR 23

Scoring table:

BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 328717 seqs, 42310858 residues

Total number of hits satisfying chosen parameters: 328717

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Database : Listing first 45 summaries

Issued Patents -AA: \*  
1: /cgn2\_6/ptodata/1/1aa/5A.COMB.pep: \*  
2: /cgn2\_6/ptodata/1/1aa/5B.COMB.pep: \*  
3: /cgn2\_6/ptodata/1/1aa/6A.COMB.pep: \*  
4: /cgn2\_6/ptodata/1/1aa/6B.COMB.pep: \*  
5: /cgn2\_6/ptodata/1/1aa/PCITUS.COMB.pep: \*  
6: /cgn2\_6/ptodata/1/1aa/Backfile1.pep: \*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	129	100.0	164	5194596-17	Patent No. 5194596
2	129	100.0	164	5219739-17	Patent No. 5219739
3	129	100.0	164	5219739-18	Patent No. 5219739
4	129	100.0	165	US-08-882-816-3	Sequence 3, Appli
5	129	100.0	165	US-08-807-052B-3	Patent No. 5194596
6	129	100.0	165	5194596-18	Patent No. 5219739
7	129	100.0	165	5219739-19	Sequence 15, Appli
8	129	100.0	189	US-08-469-427A-15	Sequence 20, Appli
9	129	100.0	190	US-08-569-063C-20	Sequence 31, Appli
10	129	100.0	190	US-08-586-039B-31	Patent No. 5332671
11	129	100.0	190	US-09-699-769-31	Sequence 3, Appli
12	129	100.0	190	5332671-3	Patent No. 5332671
13	129	100.0	191	US-08-567-200A-2	Sequence 2, Appli
14	129	100.0	191	US-08-807-992B-2	Sequence 2, Appli
15	129	100.0	191	US-08-691-794-2	Sequence 56, Appli
16	129	100.0	191	US-08-795-430-56	Sequence 3, Appli
17	129	100.0	191	US-09-392-932-3	Sequence 36, Appli
18	129	100.0	191	US-09-355-700-56	Sequence 2, Appli
19	129	100.0	191	US-08-882-816-2	Sequence 6, Appli
20	129	100.0	191	US-09-574-708A-6	Sequence 26, Appli
21	129	100.0	191	US-08-802-052B-2	Sequence 8, Appli
22	129	100.0	191	5332671-4	Sequence 35, Appli
23	129	100.0	208	US-09-244-583-26	Patent No. 5240848
24	129	100.0	213	US-09-574-708A-8	Sequence 26, Appli
25	129	100.0	214	US-08-586-039B-35	Sequence 35, Appli
26	129	100.0	214	US-09-699-769-35	Patent No. 5240848
27	129	100.0	214	5240848-11	Patent No. 5240848

28	129	100.0	215	3	US-08-807-992B-3	Sequence 3, Appli
29	129	100.0	215	3	US-08-586-039B-49	Sequence 49, Appli
30	129	100.0	215	4	US-09-699-769-43	Patent No. 5219739
31	129	100.0	215	6	5219739-22	Patent No. 5240848
32	129	100.0	215	6	PCV-US96-09001-10	Sequence 10, Appli
33	129	100.0	231	5	US-08-999-811-7	Sequence 4, Appli
34	129	100.0	232	2	US-08-807-992B-4	Sequence 7, Appli
35	129	100.0	232	3	US-09-042-105-7	Sequence 10, Appli
36	129	100.0	232	4	US-09-244-583-20	Sequence 20, Appli
37	129	100.0	43	4	US-08-824-996-9	Sequence 9, Appli
38	124	96.1	191	4	US-09-431-888-4	Sequence 29, Appli
39	123	95.3	17	3	US-08-807-992B-29	Sequence 13, Appli
40	122	94.6	19	3	US-08-807-992B-13	Sequence 16, Appli
41	76	58.9	19	3	US-08-807-992B-16	Sequence 30, Appli
42	67	51.9	19	3	US-08-807-992B-16	
43	67	51.9	19	3	US-08-807-992B-16	
44	67	51.9	19	3	US-08-807-992B-16	
45	67	51.9	19	3	US-08-807-992B-30	

## ALIGNMENTS

```
RESULT 1
5194596-17
Patent No. 5194596
; APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES, JOHN
; C.; MITCHELL, RICHARD L.
; TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL
; GROWTH FACTOR
; NUMBER OF SEQUENCES: 32
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/450,883
; FILING DATE: 14-DEC-1989
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 387,545
; FILING DATE: 27-JUL-1989
; SEQ ID NO:17:
; LENGTH: 164
5194596-17

Query Match          100.0%; Score 129; DB 6; Length 164;
Best Local Similarity 100.0%; Pred. No. 5.6e-11;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 1 CSCKNTDSRCKARQLEINERTCR 23
Db 136 CSCKNTDSRCKARQLEINERTCR 158

RESULT 2
5219739-17
Patent No. 5219739
; APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES,
; JOHN C.; MITCHELL, RICHARD L.
; TITLE OF INVENTION: DNA SEQUENCES ENCODING BVESG120 AND
; BVESG 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN
; VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVESG120 AND BVESG121
; NUMBER OF SEQUENCES: 40
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/559,041
; FILING DATE: 27-JUL-1990
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 450,883
; FILING DATE: 14-DEC-1989
; APPLICATION NUMBER: 387,545
; FILING DATE: 27-JUL-1989
; SEQ ID NO:17:
; LENGTH: 164
5219739-17

Query Match          100.0%; Score 129; DB 6; Length 164;
Best Local Similarity 100.0%; Pred. No. 5.6e-11;
```

Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLEINERTCR 23  
|||||

Db 136 CSCKNTDSRCKAROLEINERTCR 158

RESULT 3  
5219739-18

Patent No. 5219739  
APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDES,  
JOHN C.; MITCHELL, RICHARD L.  
TITLE OF INVENTION: DNA SEQUENCES ENCODING BVGEF120 AND  
HVEGF 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN  
VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVGEF120 AND HVEGF121  
NUMBER OF SEQUENCES: 40  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/559,041  
FILING DATE: 27-JUL-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 450,883  
FILING DATE: 14-DEC-1989  
APPLICATION NUMBER: 387,545  
FILING DATE: 27-JUL-1989  
SEQ ID NO: 18  
LENGTH: 164  
5219739-18

Query Match 100.0%; Score 129; DB 6; Length 164;  
Best Local Similarity 100.0%; Pred. No. 5.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLEINERTCR 23  
|||||

Db 136 CSCKNTDSRCKAROLEINERTCR 158

RESULT 4  
US-08-882-816-3

Sequence 3, Application US/08882816  
Patent No. 6395707  
GENERAL INFORMATION:  
APPLICANT: Zioncheck, Thomas F.  
APPLICANT: Deguzman, Geraldyn G.  
APPLICANT: Keck, Rodney G.  
APPLICANT: Richard, Brigitte M.  
APPLICANT: Modi, Mishit B.  
TITLE OF INVENTION: VARIANTS OF VASCULAR ENDOTHELIAL CELL  
TITLE OF INVENTION: GROWTH FACTOR HAVING ALTERED PHARMACOLOGICAL PROPERTIES,  
TITLE OF INVENTION: AND RELATED ASPECTS THEREOF  
NUMBER OF SEQUENCES: 3  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Flehr Hohbach Test Albritton & Herbert LLP  
STREET: Four Embarcadero Center, Suite 3400  
CITY: San Francisco  
STATE: California  
COUNTRY: United States  
ZIP: 94111-4187  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patentin Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/882,816  
FILING DATE: 26-JUN-1997  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/802,052  
FILING DATE: 14-FEB-1997  
ATTORNEY/AGENT INFORMATION:  
NAME: Vance, Dolly A.  
REGISTRATION NUMBER: 39,054

REFERENCE/DOCKET NUMBER: A-64957/WHD/DAV  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 781-1989  
TELEFAX: (415) 398-3249  
TELEX: 910 277299

INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 165 amino acids  
TYPE: amino acid  
STRANDEDNESS: unknown  
TOPOLOGY: unknown  
MOLECULE TYPE: protein  
US-08-882-816-3

Query Match 100.0%; Score 129; DB 4; Length 165;  
Best Local Similarity 100.0%; Pred. No. 5.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLEINERTCR 23  
|||||

Db 137 CSCKNTDSRCKAROLEINERTCR 159

RESULT 5  
US-08-802-052B-3  
Sequence 3, Application US/08802052B  
Patent No. 6485942

GENERAL INFORMATION:  
APPLICANT: Zioncheck, Thomas F.  
APPLICANT: Deguzman, Geraldyn G.  
APPLICANT: Keck, Rodney G.  
TITLE OF INVENTION: VARIANTS OF VASCULAR ENDOTHELIAL CELL  
TITLE OF INVENTION: GROWTH FACTOR HAVING ALTERED PHARMACOLOGICAL PROPERTIES,  
TITLE OF INVENTION: AND RELATED ASPECTS THEREOF  
NUMBER OF SEQUENCES: 3  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Flehr, Hohbach, Test, Albritton & Herbert  
STREET: Four Embarcadero Center, Suite 3400  
CITY: San Francisco  
STATE: California  
COUNTRY: United States  
ZIP: 94111-4187  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patentin Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/802,052B  
FILING DATE: 14-FEB-1997  
CLASSIFICATION: 435  
ATTORNEY/AGENT INFORMATION:  
NAME: Vance, Dolly A.  
REGISTRATION NUMBER: 39,054  
REFERENCE/DOCKET NUMBER: A-64069/WHD/DAV  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 781-1989  
TELEFAX: (415) 398-3249  
TELEX: 910 277299  
INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 165 amino acids  
TYPE: amino acid  
STRANDEDNESS: unknown  
TOPOLOGY: unknown  
MOLECULE TYPE: protein  
US-08-802-052B-3

Query Match 100.0%; Score 129; DB 4; Length 165;  
Best Local Similarity 100.0%; Pred. No. 5.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLEINERTCR 23

Db 137 CCKNTDSRCKAROLEINERTCR 159

RESULT 6  
Patent No. 5194596  
APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES, JOHN  
C.; MITCHELL, RICHARD L.  
TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL  
GROWTH FACTOR  
NUMBER OF SEQUENCES: 32  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/450,883  
FILING DATE: 14-DEC-1989  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 387,545  
FILING DATE: 27-JUL-1989  
SEQ ID NO: 18:  
LENGTH: 165

Query Match 100.0%; Score 129; DB 6; Length 165;  
Best Local Similarity 100.0%; Pred. No. 5.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLEINERTCR 23  
Db 137 CCKNTDSRCKAROLEINERTCR 159

RESULT 7  
5219739-19  
Patent No. 5219739  
APPLICANT: TISCHER, EDMUND G.; ABRAHAM, JUDITH A.; FIDDES,  
JOHN C.; MITCHELL, RICHARD L.  
TITLE OF INVENTION: DNA SEQUENCES ENCODING BVGEF120 AND  
HVEF 121 AND METHODS FOR THE PRODUCTION OF BOVINE AND HUMAN  
VASCULAR ENDOTHELIAL CELL GROWTH FACTORS, BVGEF120 AND HVEF121  
NUMBER OF SEQUENCES: 40  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/559,041  
FILING DATE: 27-JUL-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 450,883  
FILING DATE: 14-DEC-1989  
APPLICATION NUMBER: 387,545  
FILING DATE: 27-JUL-1989  
SEQ ID NO: 19:  
LENGTH: 165  
5219739-19

Query Match 100.0%; Score 129; DB 6; Length 165;  
Best Local Similarity 100.0%; Pred. No. 5.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLEINERTCR 23  
Db 137 CCKNTDSRCKAROLEINERTCR 159

RESULT 8  
US-08-469-427A-15  
Sequence 15, Application US/08469427A  
Patent No. 5607918  
GENERAL INFORMATION:  
APPLICANT: Eriksson, Ulf  
APPLICANT: Olofsson, Birgitta  
APPLICANT: Allitalo, Kari  
APPLICANT: Pajusola, Kari  
TITLE OF INVENTION: VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND  
NUMBER OF SEQUENCES: 17

CORRESPONDENCE ADDRESS:  
ADDRESSEE: Evenson, McKeown, Edwards & Lenahan  
STREET: 1200 G Street, N.W., Suite 700  
CITY: Washington  
STATE: DC  
ZIP: 20005  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/469,427A  
FILING DATE: 06-JUN-1995  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/397,651  
FILING DATE: 01-MAR-1995  
ATTORNEY/AGENT INFORMATION:  
NAME: Evans, Joseph D  
REGISTRATION NUMBER: 26,269  
REFERENCE/DOCKET NUMBER: 41979cp2  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202) 628-8800  
TELEFAX: (202) 628-8844  
INFORMATION FOR SEQ ID NO: 15:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 189 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-469-427A-15

Query Match 100.0%; Score 129; DB 1; Length 189;  
Best Local Similarity 100.0%; Pred. No. 6.5e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLEINERTCR 23  
Db 161 CCKNTDSRCKAROLEINERTCR 183

RESULT 9  
US-08-569-063C-20  
Sequence 20, Application US/08569063C  
Patent No. 5928939  
GENERAL INFORMATION:  
APPLICANT: ERIKSSON, Ulf  
APPLICANT: OLOFSSON, Birgitta  
APPLICANT: ALLITALO, Kari  
APPLICANT: PAJUSOLA, Kari  
TITLE OF INVENTION: VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND  
NUMBER OF SEQUENCES: 23  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Evenson, McKeown, Edwards & Lenahan, P. L. L. C.  
STREET: 1200 G Street, N.W., Suite 700  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20005  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/569,063C  
FILING DATE: 06-DEC-1995  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/469,427  
FILING DATE: 06-JUN-1995

PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/397,651  
FILING DATE: 01-MAR-1995  
ATTORNEY/AGENT INFORMATION:  
NAME: EVANS, Joseph D  
REGISTRATION NUMBER: 26,269  
REFERENCE/DOCKET NUMBER: 1064/41979CP3  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202) 628-8800  
TELEFAX: (202) 628-8844  
INFORMATION FOR SEQ ID NO: 20:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 190 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-569-063C-20

Query Match 100.0%; Score 129; DB 2; Length 190;  
Best Local Similarity 100.0%; Pred. No. 6.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCARQLEINERTCR 23  
Db 162 CCKNTDSRCARQLEINERTCR 184

RESULT 10  
US-08-586-039B-31  
Sequence 31, Application US/08586039B  
Patent No. 6140073  
GENERAL INFORMATION:  
APPLICANT: Bayne, Marvin L.  
TITLE OF INVENTION: VASCULAR ENDOTHELIAL CELL GROWTH FACTOR C  
TITLE OF INVENTION: SUBUNIT  
NUMBER OF SEQUENCES: 49  
CORRESPONDENCE ADDRESSES:  
ADDRESSEE: Merck & Co., Inc.  
STREET: 126 E. Lincoln Avenue  
CITY: Rahway  
STATE: New Jersey  
COUNTRY: USA  
ZIP: 07065-0900  
COMPUTER READABLE FORM:  
MEDIUM TYPE: floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Microsoft word 6  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/586,039B  
FILING DATE: 16-JAN-1996  
CLASSIFICATION:  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/124,259  
FILING DATE: 20-SEP-1993  
APPLICATION NUMBER: 07/676,436  
FILING DATE: 28-MAR-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Hand, J. Mark  
REGISTRATION NUMBER: 36,545  
REFERENCE/DOCKET NUMBER: 18361DA  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (908) 594-3905  
TELEFAX: (908) 594-4720  
INFORMATION FOR SEQ ID NO: 31:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 190 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein

US-08-586-039B-31

Query Match 100.0%; Score 129; DB 3; Length 190;  
Best Local Similarity 100.0%; Pred. No. 6.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCARQLEINERTCR 23  
Db 162 CCKNTDSRCARQLEINERTCR 184

RESULT 11  
US-09-699-769-31  
Sequence 31, Application US/09699769  
Patent No. 6569434  
GENERAL INFORMATION:  
APPLICANT: Bayne, Marvin L.  
TITLE OF INVENTION: VASCULAR ENDOTHELIAL CELL GROWTH FACTOR C SUBUNIT  
NUMBER OF SEQUENCES: 49  
CORRESPONDENCE ADDRESSES:  
ADDRESSEE: Merck & Co., Inc.  
STREET: 126 E. Lincoln Avenue  
CITY: Rahway  
STATE: New Jersey  
COUNTRY: USA  
ZIP: 07065-0900  
COMPUTER READABLE FORM:  
MEDIUM TYPE: floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Microsoft word 6  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/699,769  
FILING DATE: 30-Oct-2000  
CLASSIFICATION: <unknown>  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/586,039  
FILING DATE: 16-JAN-1996  
APPLICATION NUMBER: 08/124,259  
FILING DATE: 20-SEP-1993  
APPLICATION NUMBER: 07/676,436  
FILING DATE: 28-MAR-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Hand, J. Mark  
REGISTRATION NUMBER: 36,545  
REFERENCE/DOCKET NUMBER: 18361DB  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (732) 594-3905  
TELEFAX: (732) 594-4720  
INFORMATION FOR SEQ ID NO: 31:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 190 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
SEQUENCE DESCRIPTION: SEQ ID NO: 31:  
US-09-699-769-31

Query Match 100.0%; Score 129; DB 4; Length 190;  
Best Local Similarity 100.0%; Pred. No. 6.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCARQLEINERTCR 23  
Db 162 CCKNTDSRCARQLEINERTCR 184

RESULT 12  
5332671-3  
Patent No. 5332671

```

; APPLICANT: FERRARA, NAPOLEONE;LEUNG, DAVID W.H.
; TITLE OF INVENTION: PRODUCTION OF VASCULAR ENDOTHELIAL CELL
; GROWTH FACTOR AND DNA ENCODING SAME
; NUMBER OF SEQUENCES: 15
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/389,722
; FILING DATE: 04-AUG-1989
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 369,424
; FILING DATE: 21-JUN-1989
; APPLICATION NUMBER: 351,117
; FILING DATE: 12-MAY-1989
; SEQ ID NO:3:
; LENGTH: 190
5332671-3

Query Match          100.0%; Score 129; DB 6; Length 190;
Best Local Similarity 100.0%; Pred. No. 6,6e-11;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKARQLELNERTCR 23
DB      162 CSCKNTDSRCKARQLELNERTCR 184

RESULT 13
US-08-567-200A-2
; Sequence 2, Application US/08567200A
; Patent No. 6020473
; GENERAL INFORMATION:
; APPLICANT: Keyt, Bruce A.
; APPLICANT: Nguyen, Francis H.
; APPLICANT: Ferrara, Napoleone
; TITLE OF INVENTION: Variants of Vascular Endothelial Cell
; TITLE OF INVENTION: Growth Factor, Their Uses, and Processes for their
; NUMBER OF SEQUENCES: 42
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Flehr, Hohbach, Test, Albritton & Herbert
; STREET: Four Embarcadero Center, Suite 3400
; CITY: San Francisco
; STATE: California
; COUNTRY: United States
; ZIP: 94111-4187
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/567,200A
; FILING DATE: 05-DEC-1995
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Dreger, Walter H.
; REGISTRATION NUMBER: 24,190
; REFERENCE/DOCKET NUMBER: A-62326-1/WHD
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 781-1989
; TELEFAX: (415) 398-3249
; TELETYPE: 910 277299
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 191 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-567-200A-2

Query Match          100.0%; Score 129; DB 3; Length 191;
Best Local Similarity 100.0%; Pred. No. 6,6e-11;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```

QY      1 CSCKNTDSRCKARQLELNERTCR 23
DB      163 CSCKNTDSRCKARQLELNERTCR 185

RESULT 14
US-08-807-992B-2
; Sequence 2, Application US/08807992B
; Patent No. 6022541
; GENERAL INFORMATION:
; APPLICANT: Senger, Donald R
; APPLICANT: Dvorak, Harold F
; TITLE OF INVENTION: Immunological preparation for concurrent
; TITLE OF INVENTION: specific binding to spatially exposed regions of vascular
; TITLE OF INVENTION: permeability factor bound in-vivo to a tumor associated b1c
; NUMBER OF SEQUENCES: 31
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: David Prashker, Esq.
; STREET: P.O. Box 5387
; CITY: Magnolia
; STATE: Massachusetts
; COUNTRY: USA
; ZIP: 01930
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette, 3.50 inch, 1.40 Mb storage
; OPERATING SYSTEM: MS DOS
; SOFTWARE: Wordperfect version 5.1
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/807,992B
; FILING DATE: March 3, 1997
; CLASSIFICATION: 424
; ATTORNEY/AGENT INFORMATION:
; NAME: David Prashker, Esq.
; REGISTRATION NUMBER: 29,693
; REFERENCE/DOCKET NUMBER: BIS-033
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (978) 525-3794
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 191 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; US-08-807-992B-2

Query Match          100.0%; Score 129; DB 3; Length 191;
Best Local Similarity 100.0%; Pred. No. 6,6e-11;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKARQLELNERTCR 23
DB      163 CSCKNTDSRCKARQLELNERTCR 185

RESULT 15
US-08-691-794-2
; Sequence 2, Application US/08691794
; Patent No. 6057428
; GENERAL INFORMATION:
; APPLICANT: Keyt, Bruce A.
; APPLICANT: Nguyen, Francis H.
; APPLICANT: Ferrara, Napoleone
; APPLICANT: Cunningham, Brian C.
; APPLICANT: Wells, James A.
; APPLICANT: Li, Bing
; TITLE OF INVENTION: Variants of Vascular Endothelial Cell
; TITLE OF INVENTION: Growth Factor, Their Uses, and Processes for their
; NUMBER OF SEQUENCES: 45
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Flehr, Hohbach, Test, Albritton & Herbert
```

STREET: Four Embarcadero Center, Suite 3400  
CITY: San Francisco  
STATE: California  
COUNTRY: United States  
ZIP: 94111-4187  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/691,794  
FILING DATE: 02-AUG-1996  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 60/002,827  
FILING DATE: 25-AUG-1995  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/567,200  
FILING DATE: 05-DEC-1995  
ATTORNEY/AGENT INFORMATION:  
NAME: Dreger, Walter H.  
REGISTRATION NUMBER: 24,190  
REFERENCE/DOCKET NUMBER: A-63758/WHD  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 781-1989  
TELEFAX: (415) 398-3249  
TELEX: 910 277299  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 191 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-691-794-2

Query Match 100.0%; Score 129; DB 3; Length 191;  
Best Local Similarity 100.0%; Pred. No. 6.6e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
OY 1 CCKNTDSRCKAROLELNERTCR 23  
DB 163 CCKNTDSRCKAROLELNERTCR 185

Search completed: September 12, 2003, 10:35:49  
Job time : 31 secs

GenCore version 5.1.6  
Copyright (c) 1993 - 2003 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 12, 2003, 10:30:41 : Search time 83 Seconds  
(without alignments)  
43.984 Million cell updates/sec

Title: US-09-579-420B-1\_COPY\_22\_44  
Perfect score: 129  
Sequence: 1 CSCKNTDSRCARQLEINERFCR 23

Scoring table:  
BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 1107863 seqs, 158726573 residues

Total number of hits satisfying chosen parameters: 1107863

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database :

A\_Geneseq\_19Jun03:\*

- 1: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:\*
- 2: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:\*
- 3: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:\*
- 4: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:\*
- 5: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:\*
- 6: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1985.DAT:\*
- 7: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:\*
- 8: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:\*
- 9: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1988.DAT:\*
- 10: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1989.DAT:\*
- 11: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1990.DAT:\*
- 12: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1991.DAT:\*
- 13: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1992.DAT:\*
- 14: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1993.DAT:\*
- 15: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1994.DAT:\*
- 16: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1995.DAT:\*
- 17: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1997.DAT:\*
- 18: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1998.DAT:\*
- 19: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1998.DAT:\*
- 20: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA1999.DAT:\*
- 21: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA2000.DAT:\*
- 22: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA2001.DAT:\*
- 23: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA2002.DAT:\*
- 24: /SIDSI/gcgdata/geneseq/geneseqp-emb1/AA2003.DAT:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	129	100.0	24	AAV22024	VEGF antagonist pe
2	129	100.0	44	AAAR42613	Encoded by human v
3	129	100.0	44	AAV23249	SEQ ID NO. 11 of W
4	129	100.0	44	AAE33331	Human vascular end
5	129	100.0	45	AAV22023	VEGF antagonist pe
6	129	100.0	51	AAE15417	Human vascular end
7	129	100.0	75	AAE15418	Human vascular end
8	129	100.0	92	AAE15419	Human vascular end
9	129	100.0	164	AAAR10911	Bovine vascular en

10	129	100.0	164	AAAR8920	Bovine VEGF-164.
11	129	100.0	165	AAAR38921	Human VEGF-165. H
12	129	100.0	165	AAAR31085	Vascular endotheli
13	129	100.0	165	AAAR31086	Vascular endotheli
14	129	100.0	165	AAAR31087	Vascular endotheli
15	129	100.0	165	AAAR31088	Vascular endotheli
16	129	100.0	165	AAAR31089	Vascular endotheli
17	129	100.0	165	AAAR31090	Vascular endotheli
18	129	100.0	165	AAAR31091	Vascular endotheli
19	129	100.0	165	AAAR31092	Vascular endotheli
20	129	100.0	165	AAAR31093	Vascular endotheli
21	129	100.0	165	AAAR31094	Vascular endotheli
22	129	100.0	165	AAAR31095	Vascular endotheli
23	129	100.0	165	AAAR31096	Vascular endotheli
24	129	100.0	165	AAAR31097	Vascular endotheli
25	129	100.0	165	AAAR31098	Vascular endotheli
26	129	100.0	189	AAAR31099	Vascular endotheli
27	129	100.0	189	AAAR31100	Vascular endotheli
28	129	100.0	189	AAAR31101	Vascular endotheli
29	129	100.0	190	AAAR31102	Vascular endotheli
30	129	100.0	190	AAAR31103	Vascular endotheli
31	129	100.0	190	AAAR31104	Vascular endotheli
32	129	100.0	190	AAAR31105	Vascular endotheli
33	129	100.0	190	AAAR31106	Vascular endotheli
34	129	100.0	190	AAAR31107	Vascular endotheli
35	129	100.0	190	AAAR31108	Vascular endotheli
36	129	100.0	190	AAAR31109	Vascular endotheli
37	129	100.0	190	AAAR31110	Vascular endotheli
38	129	100.0	190	AAAR31111	Vascular endotheli
39	129	100.0	190	AAAR31112	Vascular endotheli
40	129	100.0	190	AAAR31113	Vascular endotheli
41	129	100.0	190	AAAR31114	Vascular endotheli
42	129	100.0	190	AAAR31115	Vascular endotheli
43	129	100.0	190	AAAR31116	Vascular endotheli
44	129	100.0	190	AAAR31117	Vascular endotheli
45	129	100.0	190	AAAR31118	Vascular endotheli

## ALIGNMENTS

RESULT 1	
ID	AAV22024
AAV22024	standard; peptide; 24 AA.
AAV22024:	
26-AUG-1999	(first entry)
VEGF antagonist peptide.	
VEGF: vascular endothelial growth factor; antagonist; neovascularisation; angiogenesis; retinal neovascularisation; haemangioma; Kaposi's sarcoma; solid tumour growth; leukoemia; metastasis; psoriasis; osteoarthritis; angiogenic disease; neovascular glaucoma; diabetic retinopathy; therapy; rheumatoid arthritis; endometriosis; muscular degeneration; retinopathy of prematurity.	
Homo sapiens.	
WO9929861-A1.	
17-JUN-1999.	
09-DEC-1998;	98WO-US26103.
12-DEC-1997;	97US-0069687.
09-DEC-1997;	97US-0069155.
(CHIL-) CHILDRENS MEDICAL CENT.	
Klagsbrun M, Soker S;	

DR WPI: 1999-385607/32.  
XX  
XX  
PT New peptide antagonists of vascular endothelial growth factor (VEGF)  
XX  
XX  
PS Claim 2: Page 46; 53pp; English.  
XX  
CC This sequence represents a vascular endothelial growth factor (VEGF)  
CC antagonist of the invention. The antagonist is a portion of the seventh  
CC exon of VEGF, and acts as an antagonist to all VEGF isoforms, even if  
CC they do not have exon 7. The VEGF antagonist peptides can be used to  
CC treat diseases or disorders associated with VEGF-induced  
CC neovascularisation or inappropriate angiogenesis. Diseases and disorders  
CC treated include retinal neovascularisation, haemangiomas, solid tumour  
CC growth, leukaemia, metastasis, psoriasis, neovascular glaucoma, diabetic  
CC retinopathy, rheumatoid arthritis, osteoarthritis, endometriosis,  
CC muscular degeneration, and retinopathy of prematurity (ROP), and Kaposi's  
CC sarcoma. Solid tumours expressing VEGF are also a target for gene  
CC therapy using the peptide antagonist of the invention, e.g. neoplasms of  
CC the central nervous system (glioblastomas, astrocytomas, neuroblastomas,  
CC meningiomas, ependymomas), cancers of hormone-dependent tissues (e.g.  
CC prostate, testicles, uterus, ovary, mammary carcinoma), melanomas,  
CC cancers of the lung, and cancers of the gastrointestinal tract. Current  
CC treatment of angiogenic diseases is inadequate. Although preliminary  
CC results with antiangiogenic proteins are promising, the proteins are  
CC relatively large in size and so are difficult to use and produce.  
CC Antiangiogenic agents that show improvement in size, ease of production,  
CC stability and/or potency would be desirable. The peptides of the  
CC invention go some way to achieving these aims.  
SQ Sequence 24 AA;  
Query Match 100.0%; Score 129; DB 20; Length 24;  
Best Local Similarity 100.0%; Pred. No. 1.4e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 1 CSCKNTDSRCAROLELNEPTCR 23  
DB 1 CSCKNTDSRCAROLELNEPTCR 23  
RESULT 2  
AAR42613  
ID AAR42613 standard; Protein: 44 AA.  
XX  
AC AAR42613;  
XX  
DT 25-MAR-2003 (updated)  
DT 28-OCT-1993 (first entry)  
XX  
DE Encoded by human VEGF-165 exon VII.  
XX  
KW Angiogenesis; wound healing; mitogen; vascular endothelial cells;  
KW Vascular Endothelial Cell Growth Factor; hVEGF-165; hVEGF-121;  
KW alternative RNA splicing.  
XX  
OS Homo sapiens.  
XX  
PN US5219739-A.  
XX  
PD 15-JUN-1993.  
XX  
PF 27-JUL-1990; 90US-0559041.  
XX  
PR 27-JUL-1989; 89US-0387545.  
PR 14-DEC-1989; 89US-0450883.  
PR 27-JUL-1990; 90US-0559041.  
XX  
PA (SCIO-) SCIOS NOVA INC.  
XX  
XX Abraham JA, Fiddes JC, Mitchell RL, Fischer EG;  
PI WPI: 1993-205302/25.  
XX  
DR N-PSDB: AAQ49609.

XX  
XX Isolated DNA sequences, expression vectors and transformant cells  
PT - used for large scale prodn. of vascular endothelial cell growth  
XX  
XX factor, for treating wounds in which neo-vascularisation is  
PT required  
XX  
PS Claim 8; Fig 8; 40pp; English.  
XX  
XX The sequences of the 8 possible exons encoding human vascular  
CC endothelial cell growth factor, together with contiguous splice  
CC junctions, were obtained from overlapping genomic inserts. A method  
CC for producing VEGF is claimed comprising culturing mammalian cells  
CC transformed with an expression vector containing exons I-V and  
CC VIII. See AAQ44261 for exon I and AAQ49604-049610 for exons II-VIII.  
CC (Updated on 25-MAR-2003 to correct PF field.)  
SQ Sequence 44 AA;  
Query Match 100.0%; Score 129; DB 14; Length 44;  
Best Local Similarity 100.0%; Pred. No. 2.5e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 1 CSCKNTDSRCAROLELNEPTCR 23  
DB 22 CSCKNTDSRCAROLELNEPTCR 44  
RESULT 3  
AAV23249  
ID AAV23249 standard; Protein: 44 AA.  
XX  
AC AAV23249;  
XX  
DT 31-AUG-1999 (first entry)  
XX  
DE SEQ ID NO. 11 of WO930157.  
XX  
KW Cancer; vascular endothelial growth factor receptor; VEGF receptor;  
KW neuropilin; NP-1; NP-2; metastatic potential; malignant cell;  
KW breast cancer; prostate cancer; ischemia; gene therapy;  
KW angiogenesis; metastasis.  
XX  
OS Homo sapiens.  
XX  
PN WO930157-A2.  
XX  
PD 17-JUN-1999.  
XX  
PF 09-DEC-1998; 98WO-US26127.  
XX  
PR 12-DEC-1997; 97US-0069687.  
PR 09-DEC-1997; 97US-0069155.  
XX  
XX (CHIL-) CHILDRENS MEDICAL CENT.  
XX  
XX Klagsbrun M, Miao H, Soker S, Takashima S;  
PI WPI: 1999-395021/33.  
XX  
XX  
PT Diagnosis and prognosis of cancer using vascular endothelial growth  
PT factor receptors  
XX  
PS Disclosure; Page 80; 82pp; English.  
XX  
XX The specification describes methods for the diagnosis and prognosis of  
CC cancer using vascular endothelial growth factor (VEGF) receptors  
CC (neuropilins) such as VEGF165R/NP-1 and NP-2 which are associated with  
CC metastatic potential of a malignant cell. The methods can be used for  
CC the diagnosis and prognosis of cancer, especially breast and prostate  
CC cancer. DNA encoding VEGF165R/NP-1 or NP-2 can be used to treat  
CC ischemia, e.g. heart and limb. The DNA can also be used as an adjunct  
CC to gene therapy with VEGF. The VEGF165R/NP-1 or NP-2 proteins can be  
CC used to identify antagonists and agonists, which can be used to



CC inhibit angiogenesis, and metastasis in malignant cells. Antibodies  
CC directed against VEGF165R/NP-1 or NP-2 proteins can also be used for  
CC the treatment or prophylaxis of cancers. The present sequence is  
CC used in the course of the invention.

Sequence 44 AA;

Query Match	100.0%;	Score 129;	DB 20;	Length 44;
Best Local Similarity	100.0%;	Pred. No. 2.5e-10;		
Matches 23; Conservative	0;	Mismatches	0;	Indels 0; Gaps 0;

```

0y      1 CSCKNTDSRCKARQLELNERTCR 23
        |||||
Db      22 CSCKNTDSRCKARQLELNERTCR 44

```

AAE32331  
ID AAE32331 standard; peptide; 44 AA

AC MAE32331;

DT 24-MAR-2003 (first entry)

Human vascular endothelial growth factor (VEGF) peptide #1.

KM Vascular endothelial growth factor; VEGF; angiogenesis; wound healing;  
KM bone growth; osteoporosis; osteoarthritis; bone reconstruction; ulcer;  
KM lesion; injury; trauma; periodontal condition; protein therapy; human.

OS Homo sapiens.

PN W0200283851-A2.

PD 24-OCT-2002.

PF 10-APR-2002; 2002WO-US11406.

PR 10-APR-2001; 2001US-0832355.

PA (GENV-) GENVEC INC.

PI Kovesd I, Kessler PD;

DR WPT; 2003-075536/07.

PT New fusion protein comprising a non-heparin-binding vascular  
PT endothelial growth factor (VEGF) peptide portion and a non-VEGF peptide  
PT portion, useful for promoting angiogenesis and/or bone growth in  
PT mammals -

PS Disclosure; Page 119; 191pp; English

The invention relates to a fusion protein comprising non-heparin binding vascular endothelial growth factor (VEGF) peptide portion and a non-VEGF peptide portion useful for promoting angiogenesis and/or bone growth in mammalian host. The fusion protein is useful for promoting angiogenesis, wound healing and bone growth. Compositions containing bone growth promoting fusion protein can be used to treat osteoporosis, rheumatoid or osteoarthritis, to improve poor bone healing, to promote implant integration and function of artificial joints and to facilitate bone reconstruction. They can also be used to treat e.g. ulcers, lesions, injuries, burns, trauma, periodontal conditions, lacerations and other conditions. The invention is also useful in protein therapy. The present sequence is human VEGF peptide.

Sequence 44 AA;

Query Match	100.0%;	Score 129;	DB 24;	Length 44;
Best Local Similarity	100.0%;	Pred. No. 2.5e-10;		
Matches 23; Conservative	0;	Mismatches 0;	Indels 0;	Gaps 0;

QY 1 CSCKNTDSRCKARQLELERTCR 23

```

Db      22  C S C K N T D S R C K A R O L E I N E R T C R 44
          |||||

```

RESULT 5  
AAY22023  
ID AAY22023 standard; peptide; 45 AA

AC AAY22023;

DT 26-AUG-1999 (first entry)

DE VEGF antagonist peptide.

KW VEEF: vascular endothelial growth factor; antigonist; neovascularisation  
 KW angiogenesis; retinal neovascularisation; haemangioma; Kaprosi's sarcoma;  
 KW angiodenesis; leukaemia; metastasis; psoriasis; osteoarthritis;  
 KW solid tumour growth; leukaemia; metastasis; psoriasis; osteoarthritis;  
 KW angiogenic disease; neovascular glaucoma; diabetic retinopathy; therapy;  
 KW rheumatoid arthritis; endometriosis; muscular degeneration;  
 KW retinopathy of prematurity.

05 Homo sapiens.

PN WO9929861-A1

PD 17-JUN-1999.

PF 09-DEC-1998; 98WO-US26103

PR 12-DEC-1997; 97US-0069687

PR 09-DEC-1997; 97US-0069155

PA (CHIL-) CHILDRENS MEDICAL CENT.

PI Klagsbrun M, Soker S;

DR WPI; 1999-385607/32.

PT New peptide antagonists of vascular endothelial growth factor (VEGF)

PS Claim 1; Page 46; 53pp; English.

This sequence represents a vascular endothelial growth factor (VEGF) antagonist of the invention. The antagonist is a portion of the seventh exon of VEGF, and acts as an antagonist to all VEGF isoforms, even if they do not have exon 7. The VEGF antagonist peptides can be used to treat diseases or disorders associated with VEGF-induced neovascularisation or inappropriate angiogenesis. Diseases and disorders treated include retinal neovascularisation, haemangioma, solid tumour -growth, leukaemia, metastasis, psoriasis, neovascular glaucoma, diabetic retinopathy, rheumatoid arthritis, osteoarthritis, endometriosis, muscular degeneration, and retinopathy of prematurity (ROP), and Kaposi's sarcoma. Solid tumours expressing VEGF are also a target for gene therapy using the peptide antagonist of the invention, e.g. neoplasms of the central nervous system (glioblastomas, astrocytomas, neuroblastomas, meningiomas,ependymomas), cancers of hormone-dependent tissues (e.g. prostate, testicles, uterus, ovary, mammary carcinoma), melanomas, cancers of the lung, and cancers of the gastrointestinal tract. Current treatment of angiogenic diseases is inadequate. Although preliminary results with antiangiogenic proteins are promising, the proteins are relatively large in size and so are difficult to use and produce. Antiangiogenic agents that show improvement in size, ease of production, stability and/or potency would be desirable. The peptides of the invention go some way to achieving these aims.

SQ Sequence 45 AA;

Query Match 100.0%; Score 129; DB 20; Length 45;  
Best Local Similarity 100.0%; Pred. No. 2.5e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0

QY 1 CSCKNTDSRCARQLEINERTCR 23

DB 22 CCKNTDSRCAROLEINERTCR 44

RESULT 6  
AAE15417  
ID AAE15417 standard; Protein; 51 AA.  
XX  
AC AAE15417;  
XX  
DT 12-MAR-2002 (first entry)  
XX  
DE Human vascular endothelial growth factor 165 C-terminal protein fragment.  
XX  
KW Human; prophyllaxis; therapy; cellular proliferation; lysyl oxidase; LO;  
KW microorganism infection; angiogenesis; replication; teratocarcinoma;  
KW germ cell tumour; osteosarcoma; fibrosarcoma; angiogenic disease; AIDS;  
KW acquired immune deficiency syndrome; hyperplastic disease; inflammation;  
KW cancer; melanoma; lesion; wound; HIV-1; human immunodeficiency virus;  
KW vascular endothelial growth factor; VEGF165.  
XX  
OS Unidentified.  
XX  
FT Key Location/Qualifiers  
FT Domain 9..51  
FT /note= "Lysine and arginine-rich basic domain"  
XX  
XX WO200185157-A1.  
XX  
XX 15-NOV-2001.  
XX  
XX 10-MAY-2001; 2001WO-US15191.  
XX  
XX 10-MAY-2000; 2000US-202568P.  
XX  
XX (UYBO-) UNIV BOSTON.  
XX  
XX Li W, Kagen HM;  
XX  
XX WPI; 2002-062187/08.  
XX  
XX Composition for prophylaxis and treatment of a condition associated  
XX with abnormal cellular proliferation, angiogenesis or microorganism  
XX infection, comprises active portion of an inhibitor, preferably lysyl  
XX oxidase -  
XX  
XX Disclosure; Fig 1; 97pp; English.  
XX  
XX The patent discloses compositions and methods for prophylaxis and  
XX treatment of conditions associated with abnormal cellular proliferation,  
XX angiogenesis or microorganism infection. The composition comprises an  
XX active portion of an inhibitor, preferably lysyl oxidase (LO) which  
XX inactivates and oxidises a growth factor, angiogenic factor or a trans-  
XX activator for replication of the microorganism. The compositions of  
XX the invention are useful for prophylaxis and treatment of conditions  
XX such as cancers of the breast, colon, renal, prostate, ovary, lung,  
XX brain, uterus, skin, embryo carcinoma, teratocarcinoma, germ cell  
XX tumour, osteosarcoma, fibrosarcoma, melanoma, angiogenic diseases,  
XX AIDS (acquired immune deficiency syndrome)-associated malignancies,  
XX other tumours and hyperplastic diseases with or without inflammation.  
XX It is also useful for treating diseases associated with angiogenesis,  
XX abnormal cellular proliferation, preferably human cell proliferation  
XX (e.g., tumour, lesion or wound), angiogenesis or conditions associated  
XX with microorganism infection such as AIDS caused by HIV-1. It is useful  
XX for modulating cellular proliferation and angiogenesis by contacting  
XX mitogenic and angiogenic factor and determining regulation of cell  
XX proliferation. The present sequence is vascular endothelial growth  
XX factor (VEGF) 165 C-terminal protein fragment. VEGF is a substrate  
XX for LO. The oxidation of lysine residues of VEGF by LO dramatically  
XX reduces their mitogenic potential and thus inhibits normal and tumour  
XX cell growth.  
XX  
XX Sequence 51 AA:

Query Match 100.0%; Score 129; DB 23; Length 51;  
Best Local Similarity 100.0%; Pred. No. 2.8e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CCKNTDSRCAROLEINERTCR 23  
|||||  
DB 23 CCKNTDSRCAROLEINERTCR 45

RESULT 7  
AAE15418  
ID AAE15418 standard; Protein; 75 AA.  
XX  
AC AAE15418;  
XX  
DT 12-MAR-2002 (first entry)  
XX  
DE Human vascular endothelial growth factor 189 C-terminal protein fragment.  
XX  
KW Human; prophyllaxis; therapy; cellular proliferation; lysyl oxidase; LO;  
KW microorganism infection; angiogenesis; replication; teratocarcinoma;  
KW germ cell tumour; osteosarcoma; fibrosarcoma; angiogenic disease; AIDS;  
KW acquired immune deficiency syndrome; hyperplastic disease; inflammation;  
KW cancer; melanoma; lesion; wound; HIV-1; human immunodeficiency virus;  
KW vascular endothelial growth factor; VEGF189.  
XX  
OS Unidentified.  
XX  
FT Key Location/Qualifiers  
FT Domain 2..75  
FT /note= "Lysine and arginine-rich basic domain"  
XX  
XX WO200185157-A1.  
XX  
XX 15-NOV-2001.  
XX  
XX 10-MAY-2001; 2001WO-US15191.  
XX  
XX 10-MAY-2000; 2000US-202568P.  
XX  
XX (UYBO-) UNIV BOSTON.  
XX  
XX Li W, Kagen HM;  
XX  
XX WPI; 2002-062187/08.  
XX  
XX Composition for prophylaxis and treatment of a condition associated  
XX with abnormal cellular proliferation, angiogenesis or microorganism  
XX infection, comprises active portion of an inhibitor, preferably lysyl  
XX oxidase -  
XX  
XX Disclosure; Fig 1; 97pp; English.  
XX  
XX The patent discloses compositions and methods for prophylaxis and  
XX treatment of conditions associated with abnormal cellular proliferation,  
XX angiogenesis or microorganism infection. The composition comprises an  
XX active portion of an inhibitor, preferably lysyl oxidase (LO) which  
XX inactivates and oxidises a growth factor, angiogenic factor or a trans-  
XX activator for replication of the microorganism. The compositions of  
XX the invention are useful for prophylaxis and treatment of conditions  
XX such as cancers of the breast, colon, renal, prostate, ovary, lung,  
XX brain, uterus, skin, embryo carcinoma, teratocarcinoma, germ cell  
XX tumour, osteosarcoma, fibrosarcoma, melanoma, angiogenic diseases,  
XX AIDS (acquired immune deficiency syndrome)-associated malignancies,  
XX other tumours and hyperplastic diseases with or without inflammation.  
XX It is also useful for treating diseases associated with angiogenesis,  
XX abnormal cellular proliferation, preferably human cell proliferation  
XX (e.g., tumour, lesion or wound), angiogenesis or conditions associated  
XX with microorganism infection such as AIDS caused by HIV-1. It is useful  
XX for modulating cellular proliferation and angiogenesis by contacting  
XX mitogenic and angiogenic factor and determining regulation of cell  
XX proliferation. The present sequence is vascular endothelial growth  
XX factor (VEGF) 189 C-terminal protein fragment. VEGF is a substrate

CC The patent discloses compositions and methods for prophylaxis and  
CC treatment of conditions associated with abnormal cellular proliferation  
CC angiogenesis or microorganism infection. The composition comprises an  
CC active portion of an inhibitor, preferably lysyl oxidase (LO) which  
CC inactivates and oxidises a growth factor, angiogenic factor or a trans-  
CC activator for replication of the microorganism. The compositions of  
CC the invention are useful for prophylaxis and treatment of conditions  
CC such as cancers of the breast, colon, renal, prostate, ovary, lung,  
CC brain, uterus, skin, embryo carcinoma, teratocarcinoma, germ cell  
CC tumour, osteosarcoma, fibrosarcoma, melanoma, angiogenic diseases,  
CC AIDS (acquired immune deficiency syndrome)-associated malignancies,  
CC other tumours and hyperplastic diseases with or without inflammation.  
CC It is also useful for treating diseases associated with angiogenesis,  
CC abnormal cellular proliferation, preferably human cell proliferation  
CC (e.g., tumour, lesion or wound), angiogenesis or conditions associated  
CC with microorganism infection such as AIDS caused by HIV-1. It is useful  
CC for modulating cellular proliferation and angiogenesis by contacting  
CC mitogenic and angiogenic factor and determining regulation of cell

CC Bovine aortic endothelial cells were used in the process of  
CC obtaining cDNA encoding bVEGF (164 amino acids form). The probes  
CC represented in AAQ10806 and -07 were used in the screening procedures.  
CC This sequence, 1.e. bases 342-473 (amino acids 115-158) are spliced of  
CC the sequence, 1.e. bases 342-473 (amino acids 115-158) are spliced.  
CC The product can be used for angiogenesis and re-endothelialisation  
CC of inner vascular surfaces in wound healing, e.g. treatment of full-  
CC thickness wounds such as dermal ulcers, venous ulcers and diabetic  
CC ulcers, burns, in surgery, in balloon angioplasty and for the in  
CC vitro culturing of endothelial cells. Hybrid growth factors of PGF  
CC and VEGF can exhibit a mitogenic profile between each factor and  
CC can be used for wound healing or as inhibitors of angiogenesis for  
CC e.g. preventing the growth of tumours.  
CC VEGF analogues in which Cys residues are substid. are more stable.  
CC See also AAQ10791-93; AAQ10796-97; AAQ10806-08 and AAQ11099.  
CC (Updated on 25-MAR-2003 to correct PA field.)  
CC  
CC  
CC  
CC  
CC Sequence 164 AA:

Query Match 100.0%; Score 129; DB 12; Length 164;  
 Best Local Similarity 100.0%; Pred. No. 8,4e-10;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLELNERTCR 23  
 DB 136 CSCKNTDSRCKAROLELNERTCR 158

## RESULT 10

AAK38920  
 ID AAK38920 standard; Protein; 164 AA.

AC AAK38920;

DT 25-MAR-2003 (updated)  
 DT 28-OCT-1993 (first entry)

DE Bovine VEGF-164.

XX Angiogenesis; wound healing; mitogen; vascular endothelial cells;  
 KW Vascular Endothelial Cell Growth Factor; hVEGF-164; hVEGF-120.

OS Bos.

XX Key Location/Qualifiers

FH Key 114..158

FT Region /note= "encoded by exon which is absent in the  
 FT alternatively spliced coding sequence  
 FT which encodes hVEGF-120"

PN US5219739-A.

PD 15-JUN-1993.

PF 27-JUL-1990; 90US-0559041.

PR 27-JUL-1989; 89US-0387545.

PR 14-DEC-1989; 89US-0450883.

PR 27-JUL-1990; 90US-0559041.

PA (SCIO-) SCIOS NOVA INC.

PI Abraham JA, Fiddes JC, Mitchell RL, Tischer EG;

DR WPI; 1993-205302/25.

DR P-PSDB; AAQ44259.

XX Isolated DNA sequences, expression vectors and transformant cells  
 PT - used for large scale prodn. of vascular endothelial cell growth  
 PT factor, for treating wounds in which neo-vascularisation is  
 PT required

XX Example 4 and Claim 1; Fig 6; 40pp; English.

CC The sequence of AAQ44259 contains an open reading frame corresponding  
 CC to the 164 amino acid bovine vascular endothelial cell growth  
 CC factor (hVEGF-164, i.e. AAK38920). Alternative splicing of the  
 CC sequence gives a shorter coding sequence which encodes the 120  
 CC amino acid hVEGF (see AAK38916).

CC (Updated on 25-MAR-2003 to correct PF field.)

CC XX

SQ Sequence 164 AA;

Query Match 100.0%; Score 129; DB 14; Length 164;

Best Local Similarity 100.0%; Pred. No. 8,4e-10;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLELNERTCR 23

DB 136 CSCKNTDSRCKAROLELNERTCR 158

## RESULT 11

AAK38921  
 ID AAK38921 standard; Protein; 165 AA.

AC AAK38921;

DT 25-MAR-2003 (updated)  
 DT 28-OCT-1993 (first entry)

DE Human VEGF-165.

XX Angiogenesis; wound healing; mitogen; vascular endothelial cells;  
 KW Vascular Endothelial Cell Growth Factor; hVEGF-165; hVEGF-121.

OS Homo sapiens.

XX Key Location/Qualifiers

FH Key MISC-difference 7

FT /note= "inserted amino acid relative to hVEGF"  
 FT 115..159  
 FT Region /note= "replaced by Lys in hVEGF-121"

PN US5219739-A.

PD 15-JUN-1993.

PF 27-JUL-1990; 90US-0559041.

PR 27-JUL-1989; 89US-0387545.

PR 14-DEC-1989; 89US-0450883.

PR 27-JUL-1990; 90US-0559041.

PA (SCIO-) SCIOS NOVA INC.

PI Abraham JA, Fiddes JC, Mitchell RL, Tischer EG;

DR WPI; 1993-205302/25.

DR N-PSDB; AAQ44260.

XX Isolated DNA sequences, expression vectors and transformant cells  
 PT - used for large scale prodn. of vascular endothelial cell growth  
 PT factor, for treating wounds in which neo-vascularisation is  
 PT required

XX Example 7; Fig 7; 40pp; English.

CC The sequence of AAQ44260 contains an open reading frame corresponding  
 CC to the 165 amino acid human vascular endothelial cell growth  
 CC factor (hVEGF-165, see AAK38921). Alternative splicing of the  
 CC sequence gives a shorter coding sequence which encodes the 121  
 CC amino acid hVEGF (see AAK42607). The full-length coding sequences can  
 CC be generated using PCR with human foetal vascular smooth muscle  
 CC poly-A<sup>+</sup> RNA as template.

CC (Updated on 25-MAR-2003 to correct PF field.)

CC XX

SQ Sequence 165 AA;

Query Match 100.0%; Score 129; DB 14; Length 165;

Best Local Similarity 100.0%; Pred. No. 8,4e-10;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLELNERTCR 23

DB 137 CSCKNTDSRCKAROLELNERTCR 159

## RESULT 12

AAW31085  
 ID AAW31085 standard; Protein; 165 AA.

AC AAW31085;

XX AAW31085;

```

DT 16-JAN-1998 (first entry)
XX Vascular endothelial growth factor variant used in drug screening.
DE
XX
XX VEGF; vascular endothelial growth factor; variant; mutant;
KW substitution; drug screening; kinase domain binding region; KDR;
KW FMS-like tyrosine kinase binding region; FLT-1; drug screening;
KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;
KW neoplasia.
XX
OS Homo sapiens.
OS Synthetic.
XX
XX Key Location/Qualifiers
FT Misc-difference 63 /note= "wild-type Asp replaced by Ala"
FT Misc-difference 64 /note= "wild-type Glu replaced by Ala"
FT Misc-difference 67 /note= "wild-type Glu replaced by Ala"
FT Misc-difference 67 /note= "wild-type Glu replaced by Ala"
XX
XX WO9708313-A1.
XX
XX 06-MAR-1997.
XX
XX 23-AUG-1996; 96WO-US13621.
XX
XX 02-AUG-1996; 96US-0691791.
XX 25-AUG-1995; 95US-0002827.
XX 05-DEC-1995; 95US-0567200.
XX
XX (GETH ) GENENTECH INC.
XX
XX Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;
XX Wells JA;
XX
XX WPI. 1997-179270/16.
XX
XX Vascular endothelial cell growth factor variant - used to identify
XX candidates having agonistic or antagonistic properties with respect
XX to KDR and/or FLT receptor binding
XX
XX Claim 6; Page -: 130pp; English.
XX
XX AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.
XX Especially preferred modifications comprise mutations in the kinase
XX domain binding region (KDR) or the FMS-like tyrosine kinase binding
XX region (FLT-1). All indicated residues are preferably replaced with
XX alanine. The variants may be used in an assay for identifying
XX candidate compositions having agonistic or antagonistic properties
XX with respect to KDR and/or FLT receptor binding, by measuring the
XX effect the candidate has on the binding properties of the variants
XX to the KDR and/or FLT-1 receptors. Compositions identified may be
XX useful for treating indications where vasculogenesis or angiogenesis
XX is desired for treatment of an underlying disease state.
XX N.B. This sequence is not given in the specification, it was created
XX from a claimed specified mutant of wild-type mature VEGF.
XX
XX Sequence 165 AA;
XX
XX Query Match 100.0%; Score 129; DB 18; Length 165;
XX Best Local Similarity 100.0%; Pred. No. 8.4e-10;
XX Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Oy 1 CCKNTDSRCKAROLEINERTCR 23
DB 137 CCKNTDSRCKAROLEINERTCR 159

```

```

AC AAW31086;
XX
XX 16-JAN-1998 (first entry)
XX Vascular endothelial growth factor variant used in drug screening.
DE
XX
XX VEGF; vascular endothelial growth factor; variant; mutant;
KW substitution; drug screening; kinase domain binding region; KDR;
KW FMS-like tyrosine kinase binding region; FLT-1; drug screening;
KW testing; vasculogenesis; angiogenesis; metastasis; cancer; tumour;
KW neoplasia.
XX
OS Homo sapiens.
OS Synthetic.
XX
XX Key Location/Qualifiers
FT Misc-difference 82 /note= "wild-type Arg replaced by Ala"
FT Misc-difference 84 /note= "wild-type Lys replaced by Ala"
FT Misc-difference 86 /note= "wild-type His replaced by Ala"
XX
XX WO9708313-A1.
XX
XX 06-MAR-1997.
XX
XX 23-AUG-1996; 96WO-US13621.
XX
XX 02-AUG-1996; 96US-0691791.
XX 25-AUG-1995; 95US-0002827.
XX 05-DEC-1995; 95US-0567200.
XX
XX (GETH ) GENENTECH INC.
XX
XX Cunningham BC, Ferrara N, Keyt B, Li B, Nguyen FH;
XX Wells JA;
XX
XX WPI. 1997-179270/16.
XX
XX Vascular endothelial cell growth factor variant - used to identify
XX candidates having agonistic or antagonistic properties with respect
XX to KDR and/or FLT receptor binding
XX
XX Claim 6; Page -: 130pp; English.
XX
XX AAW31085-W31096 are vascular endothelial growth factor (VEGF) variants.
XX Especially preferred modifications comprise mutations in the kinase
XX domain binding region (KDR) or the FMS-like tyrosine kinase binding
XX region (FLT-1). All indicated residues are preferably replaced with
XX alanine. The variants may be used in an assay for identifying
XX candidate compositions having agonistic or antagonistic properties
XX with respect to KDR and/or FLT receptor binding, by measuring the
XX effect the candidate has on the binding properties of the variants
XX to the KDR and/or FLT-1 receptors. Compositions identified may be
XX useful for treating indications where vasculogenesis or angiogenesis
XX is desired for treatment of an underlying disease state.
XX N.B. This sequence is not given in the specification, it was created
XX from a claimed specified mutant of wild-type mature VEGF.
XX
XX Sequence 165 AA;
XX
XX Query Match 100.0%; Score 129; DB 18; Length 165;
XX Best Local Similarity 100.0%; Pred. No. 8.4e-10;
XX Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Oy 1 CCKNTDSRCKAROLEINERTCR 23
DB 137 CCKNTDSRCKAROLEINERTCR 159

```

RESULT 13  
AAW31086  
ID AAW31086 standard; Protein; 165 AA.  
XX

RESULT 14  
AAW31087



Best Local Similarity 100.0%; Pred. NO. 8.4e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKAROLELNERTCR 23  
|||||  
Db 137 CSCKNTDSRCKAROLELNERTCR 159

Search completed: September 12, 2003, 10:32:14  
Job time : 84 secs

**THIS PAGE BLANK (USPTO)**



GenCore version 5.1.6  
Copyright (c) 1993 - 2003 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 12, 2003, 10:30:41; Search time 40 Seconds  
(without alignments)  
55.297 Million cell updates/sec

Title: US-09-579-420B-1\_COPY\_22\_44

Perfect score: 129

Sequence: 1 CSCKNTDSRCKARQLELNERTCR 23

Scoring table: BLOSUM62

Gapop 10.0, Gapext 0.5

Searched: 283308 seqs, 96168682 residues

Total number of hits satisfying chosen parameters: 283308

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Listing first 45 summaries

Database :

1: pir1:\*  
2: pir2:\*  
3: pir3:\*  
4: pir4:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	129	100.0	190	2	S52130
2	129	100.0	190	2	B40080
3	129	100.0	190	2	B44881
4	129	100.0	190	2	A35987
5	129	100.0	214	2	A44881
6	129	100.0	232	2	A41551
7	54	41.9	1187	2	T18355
8	53.5	41.5	188	2	JC4680
9	53	41.1	161	2	T08983
10	51	39.5	126	1	C69958
11	49	38.0	1051	2	JC4091
12	48	37.2	576	2	A45536
13	48	37.2	1579	2	S25329
14	47	36.4	342	2	T16735
15	47	36.4	552	2	T51439
16	47	36.4	1220	2	A56136
17	46.5	36.0	299	2	AH0602
18	46.5	36.0	419	2	S69207
19	46	35.7	253	2	T19329
20	45	34.9	181	2	JC5207
21	45	34.9	510	2	S23466
22	45	34.9	603	2	S28941
23	45	34.9	607	1	ABX172
24	45	34.9	608	1	ABX168
25	45	34.9	934	1	A34372
26	44	34.1	148	2	T32810
27	44	34.1	216	2	AH3497
28	44	34.1	615	1	KFHU12
29	43.5	33.7	649	2	G86434

30	43.5	33.7	1150	2	T13824
31	43	33.3	134	2	B83762
32	43	33.3	362	2	B87789
33	43	33.3	386	2	A89045
34	43	33.3	451	2	A86470
35	43	33.3	454	2	A64305
36	43	33.3	503	1	A41684
37	43	33.3	511	2	S24345
38	43	33.3	593	2	S45281
39	43	33.3	642	2	T39376
40	43	33.3	1050	2	JC7889
41	43	33.3	1116	2	S63397
42	43	33.3	3005	2	T08841
43	42.5	32.9	299	2	P90741
44	42.5	32.9	299	2	A85592
45	42.5	32.9	308	1	H64819

#### ALIGNMENTS

```

RESULT 1
S52130
Vascular endothelial growth factor - pig
C:Species: Sus scrofa domestica (domestic pig)
C:Date: 14-Jul-1995 #sequence_revision 21-Jul-1995 #text_change 05-Nov-1999
C:Accession: S52130
R:Sharma, H.S.; Tang, Z.H.; Gho, B.C.G.; Verdouw, P.D.
Biochim. Biophys. Acta 1260, 235-238, 1995
A>Title: Nucleotide sequence and expression of the porcine vascular endothelial growt
A:Reference number: S52130; MUID:95143284; PMID:7841203
A:Accession: S52130
A>Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-190 <SHA>
A:Cross-references: GB:X81380; NID:9587559; PIDN:CAAS7143.1; PID:9587560

Query Match      100.0%; Score 129; DB 2; Length 190;
Best Local Similarity 100.0%; Pred. No. 1.1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY      1 CSCKNTDSRCKARQLELNERTCR 23
DB      162 CSCKNTDSRCKARQLELNERTCR 184

RESULT 2
B40080
Vascular endothelial growth factor precursor (version 2) - bovine
C:Species: Bos primigenius taurus (cattle)
C:Date: 30-Jun-1992 #sequence_revision 30-Jun-1992 #text_change 05-Nov-1999
C:Accession: B40080; B33787; A33255
R:Leung, D.W.; Cachianes, G.; Kuang, W.J.; Goeddel, D.V.; Ferrara, N.
Science 246, 1306-1309, 1989
A>Title: Vascular endothelial growth factor is a secreted angiogenic mitogen.
A:Reference number: A40080; MUID:90069608; PMID:2479986
A:Accession: B40080
A:Molecule type: mRNA
A:Residues: 1-190 <LEU>
A:Cross-references: GB:M32976; NID:9163006; PIDN:AAA30502.1; PID:9163007
R:Rischler, E.; Gospodarowicz, D.; Mitchell, R.; Silva, M.; Schilling, J.; Lau, K.; Ci
Biochem. Biophys. Res. Commun. 165, 1198-1206, 1989
A>Title: Vascular endothelial growth factor: a new member of the platelet-derived grc
A:Reference number: A33787; MUID:90121225; PMID:2610587
A:Accession: B33787
A:Molecule type: mRNA
A:Residues: 27-190 <TIS>
A:Cross-references: GB:M31836; NID:9163808; PIDN:AAA30804.1; PID:9163809
R:Ferrara, N.; Henzel, W.T.
Biochem. Biophys. Res. Commun. 161, 851-858, 1989
A>Title: Pituitary follicular cells secrete a novel heparin-binding growth factor spe
A:Reference number: A33255; MUID:89286596; PMID:2735925
A:Accession: A33255

```

A:Molecule type: protein  
A:Residues: 27-31 <FER>  
C:Keywords: alternative splicing; glycoprotein  
F:1-26/Domain: signal sequence #status predicted <SIG>  
F:27-190/Product: vascular endothelial growth factor #status predicted <MAT>  
F:100/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 100.0%; Score 129; DB 2; Length 190;  
Best Local Similarity 100.0%; Pred. No. 1.1e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKAROLELNERTCR 23  
|||||  
DB 162 CSCKNTDSRCKAROLELNERTCR 184

RESULT 3  
B44881  
vascular endothelial growth factor-1 precursor - mouse

C:Species: Mus musculus (house mouse)  
C:Date: 03-Feb-1994 #sequence\_revision 03-Feb-1994 #text\_change 05-Nov-1999  
C:Accession: B44881; A43351; A61029

R:Breier, G.; Albrecht, U.; Sterrer, S.; Risau, W.  
Development 114, 521-532, 1992

A:Title: Expression of vascular endothelial growth factor during embryonic angiogenesis  
A:Reference number: A44881; MUID:92274860; PMID:1592003

A:Accession: B44881  
A:Molecule type: mRNA  
A:Residues: 1-190 <BRE>

A:Cross-references: GB:S38083; NID:9249856; PIDN:AB22253.1; PID:9249859  
A:Experimental source: embryo

A:Note: sequence extracted from NCBI backbone (NCBIN:107622, NCBI:107623)  
R:Clafey, K.P.; Wilkison, W.O.; Spiegelman, B.M.  
J. Biol. Chem. 267, 16317-16322, 1992

A:Title: Vascular endothelial growth factor. Regulation by cell differentiation and acti  
A:Reference number: A43351; MUID:92355593; PMID:1644816

A:Accession: A43351  
A:Molecule type: mRNA  
A:Residues: 1-116, ER, 119-190 <CLA>

A:Cross-references: GB:M95200; NID:9202350; PIDN:AAA0547.1; PID:9202351  
A:Note: sequence extracted from NCBI backbone (NCBIN:110665, NCBI:110675)  
R:Rosenthal, R.A.; Megyesi, J.F.; Henzel, W.J.; Ferrara, N.; Folkman, J.

Growth Factors 4, 53-59, 1990  
A:Title: Conditioned medium from mouse sarcoma 180 cells contains vascular endothelial g  
A:Reference number: A61029; MUID:91197543; PMID:2085441

A:Accession: A61029  
A:Molecule type: protein  
A:Residues: 27-38 <ROS>

A:Keywords: alternative splicing; angiogenesis; dimer; disulfide bond; glycoprotein; mit  
Query Match 100.0%; Score 129; DB 2; Length 190;  
Best Local Similarity 100.0%; Pred. No. 1.1e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKAROLELNERTCR 23  
|||||  
DB 162 CSCKNTDSRCKAROLELNERTCR 184

RESULT 4  
A35987  
glioma-derived vascular endothelial cell growth factor - rat

C:Species: Rattus norvegicus (Norway rat)  
C:Date: 16-Nov-1990 #sequence\_revision 16-Nov-1990 #text\_change 05-Nov-1999  
C:Accession: A35987

R:Conn, G.; Bayne, M.L.; Soderman, D.D.; Kwok, P.W.; Sullivan, K.A.; Palisi, T.M.; Hope,  
Proc. Natl. Acad. Sci. U.S.A. 87, 2628-2632, 1990  
A:Title: Amino acid and cDNA sequences of a vascular endothelial cell mitogen that is ho  
A:Reference number: A35987; MUID:90207249; PMID:2320579

A:Accession: A35987  
A:Status: preliminary  
A:Molecule type: mRNA  
A:Residues: 1-190 <CON>

A:Cross-references: GB:M32167; NID:9204287; PIDN:AAA41211.1; PID:9204288

Query Match 100.0%; Score 129; DB 2; Length 190;  
Best Local Similarity 100.0%; Pred. No. 1.1e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKAROLELNERTCR 23  
|||||  
DB 162 CSCKNTDSRCKAROLELNERTCR 184

RESULT 5  
A44881

vascular endothelial growth factor-3 precursor - mouse  
N:Contains: vascular endothelial growth factor-2; vascular permeability factor

C:Species: Mus musculus (house mouse)  
C:Date: 03-Feb-1994 #sequence\_revision 03-Feb-1994 #text\_change 08-Oct-1999  
C:Accession: A44881; C44881; A60932; S52136

R:Breier, G.; Albrecht, U.; Sterrer, S.; Risau, W.  
Development 114, 521-532, 1992  
A:Title: Expression of vascular endothelial growth factor during embryonic angiogenesis  
A:Reference number: A44881; MUID:92274860; PMID:1592003

A:Accession: A44881  
A:Molecule type: mRNA  
A:Residues: 1-214 <BRE>

A:Cross-references: GB:S37052; NID:9249856; PIDN:AB22252.1; PID:9249857  
A:Experimental source: embryo  
A:Note: sequence extracted from NCBI backbone (NCBIN:104677, NCBI:104678)

A:Accession: C44881  
A:Molecule type: mRNA  
A:Residues: 1-140, 209-214 <BR2>

A:Cross-references: GB:S38100; NID:9249860; PIDN:AB22254.1; PID:9249861  
A:Note: sequence extracted from NCBI backbone (NCBIN:107624, NCBI:107625)  
R:Clausen, M.; Gerlach, M.; Gerlach, H.; Brett, J.; Wang, F.; Familletti, P.C.; Pan, Y

J. Exp. Med. 172, 1535-1545, 1990  
A:Title: Vascular permeability factor: a tumor-derived polypeptide that induces endot  
A:Reference number: A60932; MUID:91079755; PMID:2258694

A:Accession: A60932  
A:Molecule type: protein  
A:Residues: 27-33 <CLA>

R:Sugihara, T.; Kall, S.C.; Mitsui, Y.; Madhwa, R.  
Biochim. Biophys. Acta 1224, 365-370, 1994  
A:Title: Enhanced expression of multiple forms of VEGF is associated with spontaneous  
A:Reference number: S52136; MUID:95101726; PMID:7803491

A:Accession: S52136  
A:Status: preliminary  
A:Molecule type: protein

A:Residues: 27-46 <SUG>  
C:Comment: Homodimers could be demonstrated for recombinant VEGF-2 but not VEGF-3.  
C:Keywords: alternative splicing; angiogenesis; disulfide bond; glycoprotein; homodim

F:1-26/Domain: signal sequence #status predicted <SIG>  
F:27-214/Product: vascular endothelial growth factor-3 #status experimental <MAT>

Query Match 100.0%; Score 129; DB 2; Length 214;  
Best Local Similarity 100.0%; Pred. No. 1.2e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKAROLELNERTCR 23  
|||||  
DB 186 CSCKNTDSRCKAROLELNERTCR 208

RESULT 6  
A41551

vascular endothelial growth factor 206 precursor - human  
N:Alternate names: vascular permeability factor  
N:Contains: vascular endothelial growth factor 121 (VEGF 121); VEGF 165; VEGF 189; VE

C:Species: Homo sapiens (man)  
C:Date: 28-Aug-1992 #sequence\_revision 28-Aug-1992 #text\_change 05-Nov-1999  
C:Accession: A41551; C41551; B41551; A40454; B40454; C40454; A40079; A40080; J01463;

R:Houck, K.A.; Ferrara, N.; Winer, J.; Cachianes, G.; Li, B.; Leung, D.W.  
Mol. Endocrinol. 5, 1806-1814, 1991  
A:Title: The vascular endothelial growth factor family: identification of a fourth mo

A:Reference number: A41551; MUID:92168017; PMID:1791831  
A:Accession: A41551  
A:Molecule type: mRNA  
A:Residues: 1-232 <H0U1>  
A:Cross-references: GB:S85192; NID:g246155; PID:g246156  
A:Accession: C41551  
A:Status: nucleic acid sequence not shown  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 183-232 <H0U2>  
A:Accession: B41551  
A:Status: nucleic acid sequence not shown; not compared with conceptual translation  
A:Molecule type: mRNA  
A:Residues: 1-141,227-232 <H0U>  
R:Ritscher, E.; Mitchell, R.; Hartman, T.; Silva, M.; Gospodarowicz, D.; Flidde, J.C.; AH  
J. Biol. Chem. 266, 11947-11954, 1991  
A:Title: The human gene for vascular endothelial growth factor. Multiple protein forms a  
A:Reference number: A40454; MUID:91268072; PMID:1711045  
A:Accession: A40454  
A:Molecule type: DNA  
A:Residues: 1-165,183-232 <T11>  
A:Cross-references: GB:M63971; GB:M63972; GB:M63973; GB:M63974; GB:M63975; GB:M63976; GB  
A:Accession: B40454  
A:Molecule type: DNA  
A:Residues: 1-140, 'N', 183-232 <T12>  
A:Cross-references: GB:M63971; GB:M63972; GB:M63973; GB:M63974; GB:M63975; GB:M63977; GB  
A:Accession: C40454  
A:Molecule type: DNA  
A:Residues: 1-141,227-232 <T13>  
A:Cross-references: GB:M63971; GB:M63972; GB:M63973; GB:M63974; GB:M63975; GB:M63978  
R:Reck, P.J.; Hauser, S.D.; Krivli, G.; Sanzo, K.; Warren, T.; Feder, J.; Connolly, D.T.  
Science 246, 1309-1312, 1989  
A:Title: Vascular permeability factor, an endothelial cell mitogen related to PDGF.  
A:Reference number: A40079; MUID:90069609; PMID:2479987  
A:Accession: A40079  
A:Status: not compared with conceptual translation  
A:Molecule type: mRNA  
A:Residues: 1-165,183-232 <KEC>  
A:Cross-references: GB:M27281; NID:g340300; PIDN:AAA36807.1; PID:g340301  
R:Leung, D.W.; Cachianes, G.; Kiang, W.J.; Goeddel, D.V.; Ferrara, N.  
Science 246, 1306-1309, 1989  
A:Title: Vascular endothelial growth factor is a secreted angiogenic mitogen.  
A:Reference number: A40080; MUID:90069608; PMID:2479986  
A:Accession: A40080  
A:Status: not compared with conceptual translation  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 183-232 <LEU>  
A:Cross-references: GB:M2977; NID:g181970; PIDN:AAA3789.1; PID:g181971  
R:Weinhold, K.; Marme, D.; Welch, H.A.  
Biochem. Biophys. Res. Commun. 183, 1167-1174, 1992  
A:Title: AIDS-associated Kaposi's sarcoma cells in culture express vascular endothelial  
A:Reference number: JQ1463; MUID:92231879; PMID:1567395  
A:Accession: JQ1463  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 183-232 <MEI>  
A:Cross-references: EMBL:X62568; NID:g937658; PIDN:CAA44447.1; PID:g937659  
A:Experimental source: AIDS-Kaposi's sarcoma cell  
A:Accession: JQ1464  
A:Molecule type: mRNA  
A:Residues: 1-140, 'N', 227-232 <ME2>  
A:Experimental source: AIDS-Kaposi's sarcoma cell  
R:Connolly, D.T.; Olander, J.V.; Heuvelman, D.; Nelson, R.; Monsell, R.; Siegel, N.; Hay  
J. Biol. Chem. 264, 20017-20024, 1989  
A:Title: Human vascular permeability factor. Isolation from U937 cells.  
A:Reference number: A34492; MUID:90062112; PMID:2584205  
A:Accession: A34492  
A:Molecule type: protein  
A:Residues: 27-36;43-49, 'R', 72-76, 'Q', 78-81;59-71 <CON>  
C:Comment: The most common of several alternatively spliced forms is VEGF 165.  
C:Genetics:  
A:Gene: GDB:VEGF  
A:Cross-references: GDB:132244; OMIM:192240  
A:Map position: 6p21-6p12  
A:Function:

```

C:Keywords: alternative promotes fluid and protein leakage from blood vessels
F:1-232/Product: vascular endothelial growth factor 206 precursor #status predicted <
F:1-165,183-232/Product: vascular endothelial growth factor 189 precursor #status pre
F:1-141,227-232/Product: vascular endothelial growth factor 121 precursor #status pre
F:1-26/Domain: signal sequence #status predicted <Sig>
F:101/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match      100.0%; Score 129; DB 2; Length 232;
Best Local Similarity 100.0%; Pred. No. 1,3e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKAROLELNERTCR 23
        ||| | | | | | | | | | | | | | | |
DB       204 CSCKNTDSRCKAROLELNERTCR 226

RESULT 7
T18355
hypothetical protein P3 - Mycoplasma hyorhinis
C:Species: Mycoplasma hyorhinis
C:Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change 07-Dec-1999
C:Accession: T18355
R:Deng, G.; McIntosh, M.A.
J. Bacteriol. 176, 5929-5937, 1994
A>Title: An amplifiable DNA region from the Mycoplasma hyorhinis genome.
A:Reference number: Z18888; MUID:95014025; PMID:7928953
A:Accession: T18355
A>Status: preliminary; translated from GB/EMBL/DDBJ
A:Molecule type: DNA
A:Residues: 1,1187 <DEN>
A:Cross-references: EMBL:L11447; NID:g150156; PID:g664956; PIDN:AAA62228.1
C:Genetics:
A:Genetic code: SGC3

Query Match      41.9%; Score 54; DB 2; Length 1187;
Best Local Similarity 40.9%; Pred. No. 11;
Matches 9; Conservative 1; Mismatches 12; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKAROLELNERTCR 22
        ||| | | | | | | | | | | | | | | |
DB       393 CACPNITCACCEHCECTESTC 414

RESULT 8
JC4680
vascular endothelial growth factor-related factor 167 precursor - mouse
N:Alternate names: VRF 167 protein
C:Species: Mus musculus (house mouse)
C:Date: 10-May-1996 #sequence_revision 19-Jul-1996 #text_change 05-Nov-1999
A:Accession: JC4680
R:Townson, S.; Lagercrantz, J.; Grimmond, S.; Silins, G.; Nordenskjold, M.; Weber, G.
Biochem. Biophys. Res. Commun. 220, 922-928, 1996
A>Title: Characterization of the murine VEGF-related factor gene.
A:Reference number: JC4679; MUID:96183052; PMID:8607868
A:Accession: JC4680
A:Molecule type: mRNA
A:Residues: 1-188 <NOW>
A:Cross-references: CB:V43837; NID:g1314335; PIDN:AAC52553.1; PID:g1314336
C:Comment: This factor is a mitogen, that is selective for endothelial cells, and bel
ar endothelial growth factors 167 and VEGF 186.
C:Genetics:
A:Gene: vrf
A:Map position: 19
A:Introns: 137/2
F:1-21/Domain: signal sequence #status predicted <Sig>
F:22-188/Product: vascular endothelial growth factor-related factor #status predicted

Query Match      41.5%; Score 53.5; DB 2; Length 188;
Best Local Similarity 46.2%; Pred. No. 2.9;
Matches 12; Conservative 2; Mismatches 9; Indels 3; Gaps 1;

QY      1 CSCKNTDSR---CKAROLELNERTCR 23

```

Db 157 CRCRCRRRFLHCGRGLEINPFCR 182

## RESULT 9

hypothetical protein F6G3.100 - Arabidopsis thaliana  
C:Species: Arabidopsis thaliana (mouse-ear cress)  
C:Date: 11-Jun-1999 #sequence\_revision 11-Jun-1999 #text\_change 22-Oct-1999  
C:Accession: T08983  
R:Byran, M.; Murphy, G.; Ridley, P.; Hudson, S.; Bancroft, I.; Mewes, H.W.; Mayer, K.F.X  
submitted to the Protein Sequence Database, May 1999  
A:Reference number: Z16520  
A:Accession: T08983  
A:Molecule type: DNA  
A:Residues: 1-161 <BEV>  
A:Cross-references: EMBL:AL078464; GSPDB:GN00062; ATSP:F6G3.100  
A:Experimental source: cultivar Columbia; BAC clone F6G3  
C:Genetics:  
A:Gene: ATSP:F6G3.100  
A:Map position: 4  
A:Introns: 38/1; 136/1

Query Match 41.1%; Score 53; DB 2; Length 161;  
Best Local Similarity 45.0%; Pred. No. 3;  
Matches 9; Conservative 3; Mismatches 8; Indels 0; Gaps 0;

QY 3 CKNTDSRCKAROLELNER 22  
Db 54 CNCDERCKAKHGSESSC 73

## RESULT 10

conserved hypothetical protein yqgZ - Bacillus subtilis  
C:Species: Bacillus subtilis  
C:Date: 10-Sep-1999 #sequence\_revision 10-Sep-1999 #text\_change 21-Jul-2000  
C:Accession: C69958  
R:Kunst, F.; Ogasawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; Bertei  
C.; Bron, S.; Brouillet, S.; Burscht, C.V.; Caldwell, B.; Capiano, V.; Carter, N.M.; Chc  
A.; Ehrlich, S.D.; Emerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Ferrari, E.  
Nature 390, 249-256, 1997  
A:Authors: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Gallier  
lech, J.; Harwood, C.R.; Henaute, A.; Hilbert, H.; Holsappel, S.; Hosono, S.; Hullio, M.F.  
Koetter, P.; Koningstein, G.; Krogh, S.; Kumano, M.; Kurita, K.; Lapidus, A.; Lardiniois,  
A:Authors: Lauber, J.; Lazarevic, V.; Lee, S.M.; Levine, A.; Liu, H.; Masuda, S.; Maueel  
Y. M.; Ogawa, K.; Ogiwara, A.; Oudega, B.; Park, S.H.; Parro, V.; Pohl, T.M.; Portetelle  
Rieger, M.; Rivolta, C.; Rocha, E.; Roche, B.; Rose, M.; Sadale, Y.; Sato, T.; Scanlon,  
A:Authors: Schleich, S.; Schroeter, R.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Serot  
Akeuchi, M.; Tamakoshi, A.; Tanaka, T.; Terpstra, P.; Tognoni, A.; Tosato, V.; Uchiyama,  
T.; Winters, P.; Wipat, A.; Yamamoto, H.; Yamane, K.; Yasumoto, K.; Yata, K.; Yoshida, K  
A:Authors: Yoshikawa, H.F.; Zunsstein, E.; Yoshikawa, H.; Danchin, A.  
A:Title: The complete genome sequence of the Gram-positive bacterium Bacillus subtilis.  
A:Reference number: A69580; MUID:96044033; PMID:9384377  
A:Accession: C69958  
A:Status: preliminary; nucleic acid sequence not shown; translation not shown  
A:Molecule type: DNA  
A:Residues: 1-126 <KUN>  
A:Cross-references: GB:Z99116; GB:AL009126; NID:g2634723; PIDN:CAB14408.1; PID:g2634911  
A:Experimental source: strain 168  
C:Genetics:  
A:Gene: yqgZ  
C:Superfamily: hypothetical protein yjbd

Query Match 39.5%; Score 51; DB 1; Length 126;  
Best Local Similarity 52.6%; Pred. No. 4.6;  
Matches 10; Conservative 2; Mismatches 7; Indels 0; Gaps 0;

QY 2 SCKNTDSRCKAROLELNER 20  
Db 15 SCRTKTHMLKAHQIEFNER 33

## RESULT 11

glycoprotein A - Pneumocystis carinii  
JC4091  
N:Alternate names: gpi20; MSG; P15  
C:Species: Pneumocystis carinii  
C:Date: 23-Jul-1995 #sequence\_revision 03-Aug-1995 #text\_change 15-Jun-2001  
C:Accession: JC4091  
R:Wright, T.W.; Blascoondal, T.Y.; Haldaris, C.G.; Gigliotti, F.; Simpson Haldaris, P  
DNA Res. 2, 77-88, 1995  
A:Title: Isoform diversity and tandem duplication of the glycoprotein a gene in ferre  
A:Reference number: JC4091; MUID:96093928; PMID:7584051  
A:Accession: JC4091  
A:Molecule type: mRNA  
A:Residues: 1-1051 <MRI>  
A:Cross-references: GB:U19871; NID:9841241; PIDN:AAA67766.1; PID:9841242  
C:Comment: This protein is one of the ligands participating in the adherence of the b  
C:Genetics:  
A:Gene: gpa  
C:Superfamily: Pneumocystis carinii major surface glycoprotein MSG100  
C:Keywords: glycoprotein; tandem repeat  
F:135,259,417,420,514,612,631,642,672,689,703,757,830/Binding site: carbohydrate (Asn

Query Match 38.0%; Score 49; DB 2; Length 1051;  
Best Local Similarity 50.0%; Pred. No. 50;  
Matches 9; Conservative 3; Mismatches 6; Indels 0; Gaps 0;

QY 3 CKNTDSRCKAROLELNER 20  
Db 385 CKNKDSWCKKLQDEIRKK 402

## RESULT 12

hemagglutinin-neuraminidase (EC 3.2.1.-) - La Piedad-Michoacan-Mexico virus  
A4536  
C:Species: La Piedad-Michoacan-Mexico virus, LPWV  
C:Date: 22-Apr-1993 #sequence\_revision 22-Apr-1993 #text\_change 22-Jun-1999  
C:Accession: A4536  
R:Sundqvist, A.; Berg, M.; Moreno-Lopez, J.; Lhne, T.  
Arch. Virol. 122, 331-340, 1992  
A:Title: The hemagglutinin-neuraminidase glycoprotein of the porcine parvovirus L  
A:Reference number: A4536; MUID:92117870; PMID:1731697  
A:Contents: Michoacan virus LPWV, swine  
A:Accession: A4536  
A:Status: preliminary  
A:Molecule type: genomic RNA  
A:Residues: 1-576 <SUN>  
A:Cross-references: GB:S77541; NID:g243065; PIDN:AAB21049.1; PID:g243066  
A>Note: sequence extracted from NCBI backbone (NCBIN:77541, NCBI:77542)  
C:Superfamily: paramyxovirus hemagglutinin-neuraminidase  
C:Keywords: glycoprotein; glycosidase; hemagglutinin; hydrolase; transmembrane protel  
F:28-46/Domain: transmembrane #status predicted <TRM>  
F:149,277,325,338/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 37.2%; Score 48; DB 2; Length 576;  
Best Local Similarity 42.1%; Pred. No. 42;  
Matches 8; Conservative 3; Mismatches 8; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNE 19  
Db 112 CHCPDCSSACPTROMLND 130

## RESULT 13

carboxypeptidase Y-sorting protein PEPI precursor - yeast (Saccharomyces cerevisiae)  
S25329  
N:Alternate names: protein YBL017c; protein YBL0302  
C:Species: Saccharomyces cerevisiae  
C:Date: 23-Apr-1993 #sequence\_revision 23-Apr-1993 #text\_change 29-Oct-1999  
C:Accession: S25329; S45751; S48868  
R:van Dyck, L.; Purnelle, B.; Skala, J.; Goffeau, A.  
Yeast 8, 769-776, 1992  
A:Title: An 11.4 Kb DNA segment on the left arm of yeast chromosome II carries the ca  
A:Reference number: S25329; MUID:93070614; PMID:1441754

A:Accession: S25329  
A:Molecule type: DNA  
A:Residues: 1-1579 <VANT>  
A:Cross-references: EMBL:K68577; NID:q3302; PIDN:CAA8568.1; PID:q3303  
R:Goffeau, A.; Jonhau, J.L.; Purnelle, B.; Skala, J.; de Wergifosse, P.; van Dyck, L.  
submitted to the Protein Sequence Database, August 1994  
A:Reference number: S45745  
A:Accession: S45751  
A:Molecule type: DNA  
A:Residues: 1-1579 <GOF>  
A:Cross-references: EMBL:Z53778; NID:q536008; PIDN:CAA8436.1; PID:q536009; MIPS:YBL017C  
R:Marusson, E.G.; Horadzovsky, B.F.; Cereghino, J.L.; Charakhanian, E.; Emr, S.D.  
Cell 77, 579-586, 1994  
A:Title: The sorting receptor for yeast vacuolar carboxypeptidase Y is encoded by the YH  
A:Reference number: S48868; MUID:94243924; PMID:8187177  
A:Accession: S48868  
A:Status: nucleic acid sequence not shown; translation not shown  
A:Molecule type: DNA  
A:Residues: 1-18, 'I', '20-37', 'E', '39-53', 'A', '55-73', 'D', '75-93', 'S', '95', 'YE', '98', 'R', '100-118', 'EKN',  
'V', '427-773', 'R', '775-1088', 'F', '1090-1265', 'S', '1267-1475', 'V', '1477-1556', 'A', '1558-1579 <MAR>  
A:Cross-references: GB:U07621; NID:q497640; PIDN:AAA1831.1; PID:q497641  
A:Note: the nucleotide sequence was submitted to the EMBL Data Library, March 1994  
C:Genetics:  
A:Gene: SGD:PEP1; VPS10; VPT1  
A:Cross-references: SGD:S0000113; MIPS:YBL017C  
A:Map position: 2L  
C:Function:  
A:Description: protein sorting  
A:Note: required for the sorting of the soluble vacuolar carboxypeptidase Y  
C:Keywords: ATP; endoplasmic reticulum; glycoprotein; P-loop; purine nucleotide binding;  
F:1-21/Domain: signal sequence #status predicted <SIG>  
F:22-1579/Product: carboxypeptidase Y-sorting protein PEP1 #status predicted <MAT>  
F:180-187/Region: nucleotide-binding motif A (P-loop)  
F:502-518/Domain: transmembrane #status predicted <TM1>  
F:928-944/Domain: transmembrane #status predicted <TM2>  
F:1396-1415/Domain: transmembrane #status predicted <TM3>  
F:1512-1541/Region: PST sequence  
F:1543-1567/Region: PST sequence  
F:1569-1579/Region: PST sequence  
F:186/Binding site: ATP/GTP (Lys) #status predicted

Query Match 37.2%; Score 48; DB 2; Length 1579;  
Best Local Similarity 34.8%; Pred. No. 95;  
Matches 8; Conservative 3; Mismatches 12; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCRKARQLELNERTC 23  
DB 1304 CSCTRDFECYDNYFYKANDGTCK 1326

RESULT 14  
T16735  
hypothetical protein R12C12.7 - Caenorhabditis elegans  
C:Species: Caenorhabditis elegans  
C:Date: 20-Sep-1999 #sequence\_revision 20-Sep-1999 #text\_change 20-Sep-1999  
C:Accession: T16735  
R:Favell, T.  
submitted to the EMBL Data Library, July 1995  
A:Description: The sequence of C. elegans cosmid R12C12.  
A:Reference number: Z18568  
A:Accession: T16735  
A:Molecule type: DNA  
A:Status: preliminary; translated from GB/EMBL/DBJ  
A:Residues: 1-342 <FAN>  
A:Cross-references: EMBL:U23510; NID:q746453; PID:q746460; PIDN:AAAC46786.1; CESP:R12C12.  
A:Experimental source: strain Bristol N2  
C:Genetics:  
A:Gene: CESP:R12C12.7  
A:Introns: 84/2; 130/3; 176/1; 221/1; 247/1; 288/2

Query Match 36.4%; Score 47; DB 2; Length 342;  
Best Local Similarity 35.0%; Pred. No. 38;  
Matches 7; Conservative 4; Mismatches 9; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCRKARQLELNERTC 20  
DB 289 CCKKAPKCKKITTENMLHCK 308

RESULT 15  
T51439  
oligopeptide transporter-like protein - Arabidopsis thaliana  
N:Alternate names: protein F2G14\_60  
C:Species: Arabidopsis thaliana (mouse-ear cress)  
C:Date: 18-Aug-2000 #sequence\_revision 18-Aug-2000 #text\_change 18-Aug-2000  
C:Accession: T51439  
R:Sato, S.; Nakamura, Y.; Kaneko, T.; Kato, T.; Asamizu, E.; Kotani, H.; Tabata, S.;  
submitted to the Protein Sequence Database, August 2000  
A:Reference number: Z25394  
A:Accession: T51439  
A:Status: preliminary  
A:Molecule type: DNA  
A:Residues: 1-552 <SAT>  
A:Cross-references: EMBL:AL391146  
A:Experimental source: cultivar Columbia; BAC clone F2G14  
C:Genetics:  
A:Map position: 5  
A:Introns: 91/3; 265/2  
A:Note: F2G14\_60

Query Match 36.4%; Score 47; DB 2; Length 552;  
Best Local Similarity 26.1%; Pred. No. 56;  
Matches 6; Conservative 8; Mismatches 9; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCRKARQLELNERTC 23  
DB 273 CMCNTEANTTTKSLPDDHKSCK 295

Search completed: September 12, 2003, 10:33:03  
Job time : 43 secs

**THIS PAGE BLANK (USPTO)**

GenCore version 5.1.6  
Copyright (c) 1993 - 2003 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 12, 2003, 10:30:41 ; Search time 22 Seconds

(without alignments)  
49.164 Million cell updates/sec

Title: US-09-579-420B-1\_COPY\_22\_44

Perfect score: 129

Sequence: 1 CSCKNTDSRCARQLELNERCR 23

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 127863 seqs, 47026705 residues

Total number of hits satisfying chosen parameters: 127863

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : SwissProt\_41:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	129	100.0	190	VEGA_BOVIN	P15691 bos taurus
2	129	100.0	190	VEGA_HORSE	O99KRO equus caball
3	129	100.0	190	VEGA_MESAU	O98PS1 mesocricetu
4	129	100.0	190	VEGA_PIG	P4151 sus scrofa
5	129	100.0	214	VEGA_CANFA	Q0MYV3 canis famli
6	129	100.0	214	VEGA_MOUSE	Q00731 mus musculu
7	129	100.0	214	VEGA_RAT	P16612 rattus norv
8	129	100.0	232	VEGA_HUMAN	P16692 homo sapien
9	126	97.7	164	VEGA_CAVPO	P26617 cavia porce
10	117	90.7	216	VEGA_CHICK	P52582 gallus gall
11	51	39.5	126	VEGA_BACSU	P54503 bacillus su
12	48	37.2	681	VEGA_MOUSE	O94229 mus musculu
13	48	37.2	1579	PEPI_YEAST	P33319 saccharomyc
14	47	36.4	1218	JPG1_HUMAN	P75504 homo sapien
15	47	36.4	1218	JAG1_MOUSE	O96XX0 mus musculu
16	47	36.4	1219	JAG1_MOUSE	O63722 rattus norv
17	46.5	36.0	419	VEGC_HUMAN	P43767 homo sapien
18	46	35.7	156	ECPP3_MOUSE	O35290 mus musculu
19	46	35.7	253	YQ58_CAEEL	O09464 caenorhadi
20	45	35.7	824	AD17_HUMAN	P76536 homo sapien
21	45	34.9	181	ENJO_CHICV	P94661 chlamydomo
22	45	34.9	510	KRK2_PLAFK	O02595 plasmodium
23	45	34.9	603	FAI12_CAVPO	O04962 cavia porce
24	45	34.9	606	ALB1_XENLA	P08759 xenopus lae
25	45	34.9	607	ALB2_XENLA	P14872 xenopus lae
26	45	34.9	934	CO6_HUMAN	P13671 homo sapien
27	44	34.1	615	FAI2_HUMAN	P00748 homo sapien
28	44	34.1	827	AD17_RAT	O921K9 rattus norv
29	44	34.1	1213	JAG3_BRARE	O90Y54 brachydanio
30	44	34.1	1242	JAG1_BRARE	O90Y57 brachydanio
31	43	33.3	310	ACP2_ENTHI	P31815 entamoeba h
32	43	33.3	315	CP2_ENTHI	O01958 entamoeba h
33	43	33.3	402	SELP_BOVIN	P43907 bos taurus

34	43	33.3	454	1	Y041_METUA	O60346 methanococ
35	43	33.3	503	1	GAL1_KLUMA	P09608 kluyveromyc
36	43	33.3	593	1	FAI2_BOVIN	P98440 bos taurus
37	43	33.3	642	1	YB65_SCHPO	O09746 schizosach
38	43	33.3	681	1	GFA2_HUMAN	O94808 homo sapien
39	43	33.3	827	1	AD17_MOUSE	O940F8 mus musculu
40	43	33.3	1116	1	YN94_YEAST	P53751 saccharomyc
41	42.5	32.9	308	1	PFE1_ECOLI	P75794 escherichia
42	42.5	32.9	1700	1	BAR3_CHITE	O03376 chitronomus
43	42.5	32.9	5376	1	ZAN_MOUSE	O08799 mus musculu
44	42	32.6	125	1	RNP_SPAEH	P16414 spalax leuc
45	42	32.6	132	1	AGSW_HUMAN	P42127 homo sapien

## ALIGNMENTS

VEGA_BOVIN	STANDARD:	PRT:	190 AA.
ID	VEGA_BOVIN		
AC	P15691:		
DT	01-APR-1990 (Rel. 14, Created)		
DR	01-APR-1990 (Rel. 14, Last sequence update)		
DT	28-FEB-2003 (Rel. 41, Last annotation update)		
DE	Vascular endothelial growth factor A precursor (VEGF-A) (Vascular permeability factor) (VPF).		
DE	VEGF OR VEGFA.		
OS	Bos taurus (Bovine).		
OC	Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;		
OC	Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidea;		
OC	Bovidae; Bovinae; Bos.		
OX	NCBI_TaxID=9913;		
RM	[1]		
RP	SEQUENCE FROM N.A., AND SEQUENCE OF 27-47.		
RX	MEDLINE=90069608; PubMed=2479986;		
RA	Leung D.W., Cachianes G., Kuang W.-J., Goeddel D.V., Ferrara N.;		
RT	"Vascular endothelial growth factor is a secreted angiogenic mitogen.";		
RT	Science 246:1306-1309(1989).		
RL	[2]		
RN	SEQUENCE OF 27-190 FROM N.A. (ISOFORMS ALPHA AND BETA).		
RP	MEDLINE=9012125; PubMed=2610687;		
RX	Ferrara N., Henzel W.J.;		
RA	"Pituitary follicular cells secrete a novel heparin-binding growth factor specific for vascular endothelial cells.";		
RT	Lau K., Crisp T., Fiddes J.C., Abraham J.A.;		
RT	"Vascular endothelial growth factor: a new member of the platelet-derived growth factor gene family.";		
RT	Biochem. Biophys. Res. Commun. 165:1198-1206(1989).		
RL	[3]		
RN	SEQUENCE OF 27-31.		
RP	MEDLINE=89286596; PubMed=2735925;		
RX	Ferrara N., Henzel W.J.;		
RA	"Pituitary follicular cells secrete a novel heparin-binding growth factor specific for vascular endothelial cells.";		
RT	Biochem. Biophys. Res. Commun. 161:851-858(1989).		
RL	[4]		
CC	- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and endothelial cell growth. It induces endothelial cell proliferation, promotes cell migration, inhibits apoptosis, and induces permeabilization of blood vessels. It binds to the VEGFR1/Flt-1 and VEGFR2/Kdr receptors and to heparan sulfate and heparin (By similarity).		
CC	- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer with PlGF (By similarity).		
CC	- SUBCELLULAR LOCATION: Secreted but remains associated to cells or in the extracellular matrix unless released by heparin (By similarity).		
CC	- ALTERNATIVE PRODUCTS:		
CC	- Event-Alternative splicing: Named isoforms-2;		
CC	Name-Alpha;		
CC	Isoid=P15691-1; Sequence=Displayed;		
CC	Name-Beta;		
CC	Isoid=P15691-2; Sequence=VSP_004613, VSP_004614;		
CC	- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.		





```
CC similarity).
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
CC EMBL: AF063013; AAK00049.1; -.
CC DR HSSP: P15692; 1VGH.
CC DR InterPro: IPR000072; PD_growth_factor.
CC DR Pfam: PF00341; PDGF_1.
CC DR ProDom: PD001629; PD_growth_factor; 1.
CC DR SMART: SM00141; PDGF_1.
CC DR PROSITE: PS00249; PDGF_1; 1.
CC DR PROSITE: PS00278; PDGF_2; 1.
CC KW Mitogen; Angiogenesis; Growth factor; Glycoprotein; Signal;
CC Heparin-binding; Multigene family
CC FT SIGNAL 1 26
CC FT CHAIN 27 190
CC FT DISULFID 51 93
CC FT DISULFID 82 127
CC FT DISULFID 86 129
CC FT DISULFID 76 76
CC FT DISULFID 85 85
CC FT CARBOHYD 100 100
CC SQ SEQUENCE 190 AA; 22276 MW; F00C5A8EA79A465F CRC64;

Query Match
Best Local Similarity 100.0%; Score 129; DB 1; Length 190;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLEINERTCR 23
DB 162 CSCKNTDSRCKAROLEINERTCR 184

RESULT 4
VEGA_PIG STANDARD; PRT; 190 AA.
AC P49151; O9GL52;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last annotation update)
DE Vascular endothelial growth factor A precursor (VEGF-A) (Vascular
DE permeability factor) (VPF).
GN VEGF OR VEGFA.
OS Sus scrofa (Pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Suidae; Sus.
OX NCBI_TaxId=9823;
RN [1]
RP SEQUENCE FROM N.A.
RC MEDLINE=95143284; PubMed=7841203;
RA Shatma H.S., Tang Z.H., Gho B.C.H., Verdouw P.D.;
RT "Nucleotide sequence and expression of the porcine vascular
RT endothelial growth factor."
RL Biochim. Biophys. Acta 1260:235-238(1995).
RN [2]
RP SEQUENCE FROM N.A.
RA Lee T., Canty J.M.;
RT "PCR cloning of porcine cardiac endothelial growth factor
RT gene."
RN Submitted (NOV-2000) to the EMBL/Genbank/DBJ databases.
CC -1- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and
CC endothelial cell growth. It induces endothelial cell
CC proliferation, promotes cell migration, inhibits apoptosis, and
CC induces permeabilization of blood vessels. It binds to the
CC VEGFR1/Flt-1 and VEGFR2/Kdr receptors and to heparan sulfate and
```

```
CC heparin (By similarity).
CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer
CC with PLGF (By similarity).
CC -1- SUBCELLULAR LOCATION: Secreted but remains associated to cells or
CC to the extracellular matrix unless released by heparin (By
CC similarity).
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
CC EMBL: X81380; CAA57143.1; -.
CC DR EMBL: AF318502; AAG33064.1; -.
CC DR PIR: S52130; S52130.
CC DR HSSP: P15692; 1VGH.
CC DR InterPro: IPR000072; PD_growth_factor.
CC DR Pfam: PF00341; PDGF_1.
CC DR ProDom: PD001629; PD_growth_factor; 1.
CC DR SMART: SM00141; PDGF_1.
CC DR PROSITE: PS00249; PDGF_1; 1.
CC DR PROSITE: PS00278; PDGF_2; 1.
CC KW Mitogen; Angiogenesis; Growth factor; Glycoprotein; Signal;
CC Heparin-binding; Multigene family.
CC FT SIGNAL 1 26
CC FT CHAIN 27 190
CC FT DISULFID 51 93
CC FT DISULFID 82 127
CC FT DISULFID 86 129
CC FT DISULFID 76 76
CC FT DISULFID 85 85
CC FT CARBOHYD 100 100
CC FT CONFLICT 102 102
CC SQ SEQUENCE 190 AA; 22368 MW; 04D408BD7913047F CRC64;

Query Match
Best Local Similarity 100.0%; Score 129; DB 1; Length 190;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCKAROLEINERTCR 23
DB 162 CSCKNTDSRCKAROLEINERTCR 184

RESULT 5
VEGA_CANFA STANDARD; PRT; 214 AA.
AC Q9MYV3; Q9XSF3; Q9XSF4; Q9XSF5;
DT 28-FEB-2003 (Rel. 41, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last annotation update)
DE Vascular endothelial growth factor A precursor (VEGF-A) (Vascular
DE permeability factor) (VPF).
GN VEGF OR VEGFA.
OS Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxId=9615;
RN [1]
RP SEQUENCE FROM N.A. (ISOFORM VEGF-188).
RC MEDLINE=201251516; PubMed=10661874;
RA Scheidegger P., Weighofer W., Suarez S., Kaser-Holz B., Steiner R.,
RA Ballmer-Hofer K., Jauss I.R.;
RT "Vascular endothelial growth factor (VEGF) and its receptors in tumor-
RT bearing dogs."
RL Biol. Chem. 380:1449-1454(1999).
RN [2]
RP SEQUENCE FROM N.A. (ISOFORMS VEGF-188; VEGF-182 AND VEGF-164).
RC TISSUE=Heart;
```

RA Jingjing L., Roque R.S.;  
 RL Submitted (MAR-1999) to the EMBL/Genbank/DBJ databases.  
 CC -1- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and  
 CC endothelial cell growth. It induces endothelial cell  
 CC proliferation, promotes cell migration, inhibits apoptosis, and  
 CC induces permeabilization of blood vessels. It binds to the  
 CC VEGFR1/Flt-1 and VEGFR2/Kdr receptors and to heparan sulfate and  
 CC heparin (By similarity).  
 CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer  
 CC with p16g (By similarity).  
 CC -1- SUBCELLULAR LOCATION: Secreted but remains associated to cells or  
 CC to the extracellular matrix unless released by heparin (By  
 CC similarity).  
 CC -1- ALTERNATIVE PRODUCTS:  
 CC Event-Alternative splicing: Named isoforms-3;  
 CC Comment-Additional isoforms seem to exist:  
 CC Name-VEGF-188;  
 CC IsoId-Q9MYV3-1; Sequence=Displayed;  
 CC Name-VEGF-182;  
 CC IsoId-Q9MYV3-2; Sequence=VSP\_004617;  
 CC Name-VEGF-164;  
 CC IsoId-Q9MYV3-3; Sequence=VSP\_004615, VSP\_004616.  
 CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
 CC -----  
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration  
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -  
 CC the European Bioinformatics Institute. There are no restrictions on its  
 CC use by non-profit institutions as long as its content is in no way  
 CC modified and this statement is not removed. Usage by and for commercial  
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>  
 CC or send an email to [license@isb-sib.ch](mailto:license@isb-sib.ch)).  
 CC -----  
 DR EMBL: AJ133758; CAB82426.1; -  
 DR EMBL: AF133250; AAD29684.1; -  
 DR EMBL: AF133249; AAD29683.1; -  
 DR EMBL: AF133248; AAD29682.1; -  
 DR HSSP: P15692; IVGH.  
 DR InterPro: IPR000072; PD\_growth\_factor.  
 DR Pfam: PF00341; PDGF; 1.  
 DR ProDom: PD001629; PD\_growth\_factor; 1.  
 DR SMART: SMO0141; PDGF; 1.  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS50278; PDGF\_2; 1.  
 DR MitoGen: Angiogenesis; Growth factor; Glycoprotein; Signal;  
 KW Heparin-binding; Alternative splicing; Multigene family.  
 FT SIGNAL 1 26  
 FT CHAIN 27 214 VASCULAR ENDOTHELIAL GROWTH FACTOR A.  
 FT DISULFID 51 93 BY SIMILARITY.  
 FT DISULFID 82 127 BY SIMILARITY.  
 FT DISULFID 86 129 BY SIMILARITY.  
 FT DISULFID 76 76 INTERCHAIN (BY SIMILARITY).  
 FT DISULFID 85 85 INTERCHAIN (BY SIMILARITY).  
 FT CARBOHD 100 100 N-LINKED (GLCNAC. . .) (POTENTIAL).  
 FT VASAPLIC 140 140 K->N (in isoform VEGF-164).  
 FT VASAPLIC 141 164 /FtId-VSP\_004615.  
 FT VASAPLIC 141 164 Missing (in isoform VEGF-164).  
 FT VASAPLIC 159 164 /FtId-VSP\_004616.  
 FT VASAPLIC 159 164 Missing (in isoform VEGF-182).  
 FT CONFLICT 143 143 I->V (IN REF. 2).  
 FT CONFLICT 161 161 P->S (IN REF. 2).  
 SO SEQUENCE 214 AA; 25175 MW; 0AC980A158C44B27 CRC64;  
 Query Match 100.0%; Score 129; DB 1; Length 214;  
 Best Local Similarity 100.0%; Pred. No. 7.1e-12;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 Oy 1 CCKNTDSRCAROLELNERFCR 23  
 Db 186 CCKNTDSRCAROLELNERFCR 208  
 RESULT 6

VEGA\_MOUSE  
 ID VEGA\_MOUSE STANDARD; PRT; 214 AA.  
 AC 000731:  
 DT 01-APR-1993 (Rel. 25, Created)  
 DT 01-OCT-1996 (Rel. 34, Last sequence update)  
 DT 15-SEP-2003 (Rel. 42, Last annotation update)  
 DE Vascular endothelial growth factor A precursor (VEGF-A) (Vascular  
 DE permeability factor) (VPF).  
 GN VEGF OR VEGFA.  
 OS Mus musculus (Mouse).  
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Mus.  
 OX NCBI\_TaxID=10090;  
 RN [1]  
 RP SEQUENCE FROM N.A. (ISOFORMS VEGF-1; VEGF-2 AND VEGF-3).  
 RX MEDLINE=92274860; PubMed=1592003;  
 RA Breier G., Albrecht U., Steier S., Risau W.;  
 RT "Expression of vascular endothelial growth factor during embryonic  
 RT angiogenesis and endothelial cell differentiation.";  
 RL Development 114:521-532(1992).  
 RN [2]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF-1).  
 RX MEDLINE=92355593; PubMed=1644816;  
 RA Clafey K.P., Wilkison W.O., Spiegelman B.M.;  
 RT "Vascular endothelial growth factor. Regulation by cell  
 RT differentiation and activated second messenger pathways.";  
 RL J. Biol. Chem. 267:16317-16322(1992).  
 RN [3]  
 RP SEQUENCE OF 1-3 FROM N.A.  
 RX MEDLINE=96216498; PubMed=8632007;  
 RA Shima D.T., Kuroki M., Deutsch U., Ng Y., Adamis A.P., D'Amore P.A.;  
 RT "The mouse gene for vascular endothelial growth factor. Genomic  
 RT structure, definition of the transcriptional unit, and  
 RT characterization of transcriptional and post-transcriptional  
 RT regulatory sequences.";  
 RL J. Biol. Chem. 271:3877-3883(1996).  
 CC -1- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and  
 CC endothelial cell growth. It induces endothelial cell  
 CC proliferation, promotes cell migration, inhibits apoptosis, and  
 CC induces permeabilization of blood vessels. It binds to the  
 CC VEGFR1/Flt-1 and VEGFR2/Kdr receptors and to heparan sulfate and  
 CC heparin (By similarity).  
 CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer  
 CC with p16g (By similarity).  
 CC -1- SUBCELLULAR LOCATION: VEGF-1 and VEGF-2 are secreted while VEGF-3  
 CC remains cell-surface associated unless released by heparin.  
 CC -1- ALTERNATIVE PRODUCTS:  
 CC Event-Alternative splicing: Named isoforms-3;  
 CC Name-VEGF-3; Synonyms-VEGF188;  
 CC IsoId-Q00731-1; Sequence=Displayed;  
 CC Name-VEGF-1; Synonyms-VEGF164;  
 CC IsoId-Q00731-2; Sequence=VSP\_004626, VSP\_004627;  
 CC Name-VEGF-2; Synonyms-VEGF120;  
 CC IsoId-Q00731-3; Sequence=VSP\_004628;  
 CC -1- TISSUE SPECIFICITY: In developing embryos, expressed mainly in the  
 CC choroid plexus, paraventricular neuroepithelium, placenta and  
 CC kidney glomeruli. Also found in bronchial epithelium, adrenal  
 CC gland and in seminiferous tubules of testis. High expression of  
 CC VEGF continues in kidney glomeruli and choroid plexus in adults.  
 CC -1- DOMAIN: VEGF-3 contains a basic insert which acts as a cell  
 CC retention signal.  
 CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
 CC -----  
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration  
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -  
 CC the European Bioinformatics Institute. There are no restrictions on its  
 CC use by non-profit institutions as long as its content is in no way  
 CC modified and this statement is not removed. Usage by and for commercial  
 CC entities requires a license agreement (See <http://www.isb-sib.ch/announce/>  
 CC or send an email to [license@isb-sib.ch](mailto:license@isb-sib.ch)).  
 CC -----  
 DR EMBL: S37052; AAB22252.1; -  
 DR EMBL: S38083; AAB22253.1; -

```

DR EMBL: S38100; AAB22254.1; -
DR EMBL: M95200; AAA40547.1; -
DR EMBL: U41383; -; NOT_ANNOTATED_CDS.
DR PIR: A44881; A44881.
DR PIR: B44881; B44881.
DR HSSP: P15692; 2VPP.
DR MGD: MGI:103178; Vegfa.
DR InterPro: IPR000072; PD_growth_factor.
DR Pfam: PF00341; PDGF_1.
DR ProDom: PD001629; PD_growth_factor_1.
DR SMART: SM00141; PDGF_1.
DR PROSITE: PS00249; PDGF_1; 1.
DR PROSITE: PS50278; PDGF_2; 1.
DR Mitogen: Angiogenesis; Growth factor; Glycoprotein; Signal;
KW Heparin-binding; Alternative splicing; Multigene family.
FT SIGNAL 1 26
FT CHAIN 27 214
FT DISULFID 51 93
FT DISULFID 82 127
FT DISULFID 86 129
FT DISULFID 76 76
FT DISULFID 85 85
FT CAROHD 100 100
FT VARSPLC 140 140
FT VARSPLC 141 164
FT VARSPLC 141 208
FT VARSPLC 117 118
FT CONFLICT 117 118
FT SEQUENCE 214 AA; 25283 MW; B5540B51E4B8E617 CRC64;

```

```

Query Match 100.0%; Score 129; DB 1; Length 214;
Best Local Similarity 100.0%; Pred. No. 7.1e-12;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

```

QY 1 CSCNTDSRCAROLENERTC 23
Db 186 CSCNTDSRCAROLENERTC 208

```

```

RESULT 7
VEGA_RAT STANDARD; PRT; 214 AA.
AC P16612; O9TKX7; O9XG6; O9XG7;
DT 01-AUG-1990 (Rel. 15, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last annotation update)
DE Vascular endothelial growth factor A precursor (VEGF-A) (Vascular
DE permeability factor) (VPF).
GN VEGF OR VEGFA.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN 11
RP SEQUENCE FROM N.A. (ISOFORM VEGF-A164), AND SEQUENCE OF 27-190.
RX MEDLINE=9207249; PubMed=2220579;
RA Conn G., Bayne M.L., Soderman D.D., Kwok P.W., Sullivan K.A.,
RA Palisi T.M., Hope D.A., Thomas K.A.;
RA "Amino acid and cDNA sequences of a vascular endothelial cell mitogen
RT that is homologous to platelet-derived growth factor.";
RT Proc. Natl. Acad. Sci. U.S.A. 87:2628-2633(1990).
RN 12
RP SEQUENCE FROM N.A. (ISOFORMS VEGF-A188; VEGF-A164; VEGF-A144 AND
RP VEGF-A120).
RA Ishii H., Arakawa T., Okayama M., Oota I., Takuma T., Inomata K.;
RT "Developmental expression of vascular endothelial growth factor-A
RT (VEGF-A) splicing variants, VEGF-A188, VEGF-A164, and VEGF-A120 in rat
RT mesenteric muscle.";
RL Submitted (DEC-1999) to the EMBL/GenBank/DBJ databases.
RN 13
RP SEQUENCE OF 27-40.

```

```

RC TISSUE-Glia1 tumor;
RX MEDLINE=95221439; PubMed=7706320;
RA Disalvo J., Bayne M.L., Conn G., Kwok P.W., Trivedi P.G.,
RA Soderman D.D., Palisi T.M., Sullivan K.A., Thomas K.A.;
RT "Purification and characterization of a naturally occurring vascular
RT endothelial growth factor: placenta growth factor heterodimer.";
RL J. Biol. Chem. 270:7717-7723(1995).
CC -1- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and
CC endothelial cell growth. It induces endothelial cell
CC proliferation, promotes cell migration, inhibits apoptosis, and
CC induces permeabilization of blood vessels. It binds to the
CC VEGFR1/Elt-1 and VEGFR2/Kdr receptors and to heparan sulfate and
CC heparin (By similarity).
CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer
CC with PlGF (By similarity).
CC -1- SUBCELLULAR LOCATION: VEGF-A120 is acidic and freely secreted.
CC VEGF-A164 is more basic, has heparin-binding properties and,
CC although a significant proportion remains cell-associated, most is
CC freely secreted. VEGF-A188 is very basic; it is cell-associated
CC after secretion and is bound avidly by heparin and the
CC extracellular matrix, although it may be released as a soluble
CC form by heparin, heparinase or plasmin (By similarity).
CC -1- ALTERNATIVE PRODUCTS:
CC Event-Alternative splicing: Named isoforms=4;
CC Comment=Additional isoforms seem to exist;
CC Name=VEGF-A188;
CC IsoId=P16612-1; Sequence=Displayed;
CC Name=VEGF-A164;
CC IsoId=P16612-2; Sequence=VSP_004629, VSP_004630;
CC Name=VEGF-A144;
CC IsoId=P16612-3; Sequence=VSP_004632;
CC Name=VEGF-A120;
CC IsoId=P16612-4; Sequence=VSP_004631;
CC -1- TISSUE SPECIFICITY: Expressed in the pituitary, in brain, in
CC particularly in supraoptic and paraventricular nuclei and the
CC choroid plexus. Also found abundantly in the corpus luteum of the
CC ovary and in kidney glomeruli.
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@sib-sib.ch).
CC -----
DR EMBL: M32167; AAA41211.1; -
DR EMBL: AF215725; AAF19211.1; -
DR EMBL: AF215726; AAF19212.1; -
DR EMBL: AF222779; AAF25958.1; -
DR HSSP: P15692; 1VPP.
DR InterPro: IPR000072; PD_growth_factor.
DR Pfam: PF00341; PDGF_1.
DR ProDom: PD001629; PD_growth_factor_1.
DR SMART: SM00141; PDGF_1.
DR PROSITE: PS00249; PDGF_1; 1.
DR PROSITE: PS50278; PDGF_2; 1.
KW Mitogen; Angiogenesis; Growth factor; Glycoprotein; Signal;
KW Heparin-binding; Alternative splicing; Multigene family.
FT SIGNAL 1 26
FT CHAIN 27 214
FT DISULFID 51 93
FT DISULFID 82 127
FT DISULFID 86 129
FT DISULFID 76 76
FT DISULFID 85 85
FT CAROHD 100 100
FT VARSPLC 140 140
FT VARSPLC 141 164
FT VARSPLC 141 208
FT VARSPLC 117 118
FT CONFLICT 117 118
FT SEQUENCE 214 AA; 25283 MW; B5540B51E4B8E617 CRC64;

```

FT FT VARSPLIC 165 208 /FTId=VSP\_004631.  
 FT MISSING (in isoform VEGF-A144).  
 FT CONFLICT 101 101 /FTId=VSP\_004632.  
 FT V -> A (IN REF. 2: AAF19212).  
 SQ SEQUENCE 214 AA: 25239 MW: 60FBB876F5304946 CRG64;  
 Query Match 100.0%; Score 129; DB 1; Length 214;  
 Best Local Similarity 100.0%; Pred. No. 7,1e-12;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 1 C5CKNTDSRCRAOLENERCR 23  
 DB 186 C5CKNTDSRCRAOLENERCTR 208  
 RESULT 8  
 VEGF\_HUMAN STANDARD; PRT: 232 AA.  
 AC P15692; O60720; O75875; Q16889; Q96NM5; Q9H1W8; Q9H1W9; Q9UH58;  
 AC Q9UL23;  
 DT 01-APR-1990 (Rel. 14, Created)  
 DT 28-SEP-2003 (Rel. 41, Last sequence update)  
 DT 15-SEP-2003 (Rel. 42, Last annotation update)  
 DE Vascular endothelial growth factor A precursor (VEGF-A) (Vascular  
 DE permeability factor) (VPF).  
 GN VEGF OR VEGFA.  
 OS Homo sapiens (Human).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.  
 OX NCBI\_Taxid=9606;  
 RN [1]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF189 AND VEGF165).  
 RA MEDLINE=90069608; PubMed=2479986;  
 RX Leung D.W., Cachianes G., Kuang W.-J., Goeddel D.V., Ferrara N.;  
 RT "Vascular endothelial growth factor is a secreted angiogenic  
 RT mitogen.";  
 RL Science 246:1306-1309(1989).  
 RN [2]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF189), AND PARTIAL SEQUENCE.  
 RA MEDLINE=90069609; PubMed=2479987;  
 RX Keck P.J., Hauser S.D., Krivi G., Sanzo K., Warren T., Feder J.,  
 RA Connolly D.T.;  
 RT "Vascular permeability factor, an endothelial cell mitogen related to  
 RT PDGF.";  
 RL Science 246:1309-1312(1989).  
 RN [3]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF189).  
 RA MEDLINE=91268072; PubMed=1711045;  
 RX Tischer E., Mitchell R., Hartman T., Silva M., Gospodarowicz D.,  
 RA Fides J.C., Abraham J.A.;  
 RT "The human gene for vascular endothelial growth factor. Multiple  
 RT protein forms are encoded through alternative exon splicing.";  
 RL J. Biol. Chem. 266:11947-11954(1991).  
 RN [4]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF206).  
 RA MEDLINE=92168017; PubMed=1791831;  
 RX Houck K.A., Ferrara N., Miner J., Cachianes G., Li B., Leung D.W.;  
 RT "The vascular endothelial growth factor family: identification of a  
 RT fourth molecular species and characterization of alternative splicing  
 RT of RNA.";  
 RL Mol. Endocrinol. 5:1806-1814(1991).  
 RN [5]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF165).  
 RX MEDLINE=92231879; PubMed=1567395;  
 RA Weindel K., Marne D., Welch H.A.;  
 RT "AIDS-associated Kaposi's sarcoma cells in culture express vascular  
 RT endothelial growth factor.";  
 RL Biochem. Biophys. Res. Commun. 183:1167-1174(1992).  
 RN [6]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF145).  
 RX MEDLINE=97207275; PubMed=9054410;  
 RA Poltorak Z., Cohen T., Sivan R., Kandelis Y., Spira G., Vlodavsky I.,  
 RA Keshet E., Neufeld G.;  
 RT "VEGF145, a secreted vascular endothelial growth factor isoform that  
 RT binds to extracellular matrix.";  
 RL J. Biol. Chem. 272:7151-7158(1997).  
 RN [7]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF183).  
 RC TISSUE=Kidney;  
 RA MEDLINE=99096474; PubMed=9878851;  
 RX Lei J., Jiang A., Pei D.;  
 RT "Identification and characterization of a new splicing variant of  
 RT vascular endothelial growth factor: VEGF183.";  
 RL Biochim. Biophys. Acta 1443:400-406(1998).  
 RN [8]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF165).  
 RC TISSUE=Breast;  
 RA MEDLINE=98119755; PubMed=9450968;  
 RX Claffey K.P., Shih S.-C., Mullen A., Dziennis S., Cusick J.L.,  
 RA Abrams K.R., Lee S.W., Detmar M.;  
 RT "Identification of a human VpF/VEGF 3' untranslated region mediating  
 RT hypoxia-induced mRNA stability.";  
 RL Mol. Biol. Cell 9:469-481(1998).  
 RN [9]  
 RP SEQUENCE OF 114-209 FROM N.A. (ISOFORM VEGF183).  
 RC TISSUE=Retina;  
 RX MEDLINE=99163503; PubMed=10067980;  
 RA Jingjing L., Xue Y., Agarwal N., Roque R.S.;  
 RT "Human Muller cells express VEGF183, a novel spliced variant of  
 RT vascular endothelial growth factor.";  
 RL Invest. Ophthalmol. Vis. Sci. 40:752-759(1999).  
 RN [10]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF165).  
 RC TISSUE=Hemangioendothelioma;  
 RA Murata H., Fukushima J., Hattori S., Okuda K., Yanagi H.;  
 RT "Human cDNA for the vascular endothelial growth factor isoform  
 RT VEGF165.";  
 RL Submitted (DEC-1998) to the EMBL/GenBank/DBJ databases.  
 RN [11]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF148).  
 RC TISSUE=Renal glomerulus;  
 RX MEDLINE=99394945; PubMed=10464055;  
 RA Whittle C.J., Gillespie K.M., Harrison R., Mathieson P.W.,  
 RA Harper S.J.;  
 RT "Heterogeneous vascular endothelial growth factor (VEGF) isoform mRNA  
 RT and receptor mRNA expression in human glomeruli, and the  
 RT identification of VEGF148 mRNA, a novel truncated splice variant.";  
 RL Clin. Sci. 97:303-312(1999).  
 RN [12]  
 RP SEQUENCE FROM N.A. (ISOFORM VEGF121).  
 RA Sato J.D., Whitney R.G.;  
 RT "Human cDNA for vascular endothelial growth factor isoform VEGF121.";  
 RL Submitted (DEC-1999) to the EMBL/GenBank/DBJ databases.  
 RN [13]  
 RP SEQUENCE FROM N.A.  
 RA Williams S.;  
 RT Submitted (DEC-2000) to the EMBL/GenBank/DBJ databases.  
 RN [14]  
 RP SEQUENCE OF 23-232 FROM N.A. (VEGF165).  
 RA Rieder M.J., Arnel T.Z., Carrington D.P., Chung M.-W., Lee K.L.,  
 RA Peel C.L., Toth E.J., Yi O., Nickerson D.A.;  
 RT Submitted (OCT-2001) to the EMBL/GenBank/DBJ databases.  
 RN [15]  
 RP PRELIMINARY SEQUENCE OF 27-36; 43-50 AND 59-81.  
 RX MEDLINE=90062112; PubMed=2584205;  
 RA Connolly D.T., Olander J.V., Heuvelman D., Nelson R., Monsell R.,  
 RA Siegel N., Haymore B.L., Leimgruber R., Feder J.;  
 RT "Human vascular permeability factor. Isolation from U937 cells.";  
 RL J. Biol. Chem. 264:20017-20024(1989).  
 RN [16]  
 RP SEQUENCE OF 27-41.  
 RX MEDLINE=93145946; PubMed=7678805;  
 RA Fiedlich B.L., Jaeger B., Schoellmann C., Weindel K., Wiltling J.,  
 RA Koebs G., Marne D., Hug H., Welch H.A.;  
 RT "Synthesis and assembly of functionally active human vascular  
 RT endothelial growth factor homodimers in insect cells.";

```

RL Eur. J. Biochem. 211:19-26(1993).
RN [17]
RX X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS) OF 34-135.
RA Muller Y.A., Li B., Christinger H.W., Wells J.A., Cunningham B.C.,
RA de Vos A.M.;
RT "Vascular endothelial growth factor: crystal structure and functional
RT mapping of the kinase domain receptor binding site.";
RL Proc. Natl. Acad. Sci. U.S.A. 94:7192-7197(1997).
RN [18]
RX X-RAY CRYSTALLOGRAPHY (1.93 ANGSTROMS) OF 34-135.
RA MEDLINE-98035455; PubMed-9351807;
RA Muller Y.A., Christinger H.W., Keyt B.A., de Vos A.M.;
RT "The crystal structure of vascular endothelial growth factor (VEGF)
RT refined to 1.93-A resolution: multiple copy flexibility and receptor
RT binding.";
RL Structure 5:1325-1338(1997).
RN [19]
RX X-RAY CRYSTALLOGRAPHY (1.9 ANGSTROMS) OF 39-134.
RA MEDLINE-99119204; PubMed-9922142;
RA Wiesmann C., Christinger H.W., Cochran A.G., Cunningham B.C.,
RA Faldbrocher W.J., Keenan C.J., Meng G., de Vos A.M.;
RT "Crystal structure of the complex between VEGF and a receptor-blocking
RT peptide.";
RL Biochemistry 37:17765-17772(1998).
RN [20]
RX STRUCTURE BY NMR OF 34-135.
RX MEDLINE-97477915; PubMed-9336848;
RA Faldbrocher W.J., Champe M.A., Christinger H.W., Keyt B.A.,
RA Starovasnik M.A.;
RT "1H, 13C, and 15N backbone assignment and secondary structure of the
RT receptor-binding domain of vascular endothelial growth factor.";
RL Protein Sci. 6:2250-2260(1997).
RN [21]
RX STRUCTURE BY NMR OF 137-215.
RX MEDLINE-98298440; PubMed-9634701;
RA Faldbrocher W.J., Champe M.A., Christinger H.W., Keyt B.A.,
RA Starovasnik M.A.;
RT "Solution structure of the heparin-binding domain of vascular
RT endothelial growth factor.";
RL Structure 6:637-648(1998).
RN [22]
RX FUNCTION.
RX MEDLINE-21320570; PubMed-11427521;
RA Murphy J.F., Fitzgerald D.J.;
RT "Vascular endothelial growth factor induces cyclooxygenase-dependent
RT proliferation of endothelial cells via the VEGF-2 receptor.";
RL FASEB J. 15:1667-1669(2001).
CC -1- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and
CC endothelial cell growth. It induces endothelial cell
CC proliferation, promotes cell migration, inhibits apoptosis, and
CC induces permeabilization of blood vessels. It binds to the
CC VEGFR1/Flt-1 and VEGFR2/Kdr receptors and to heparan sulfate and
CC heparin. Neupilin-1 binds isoforms VEGF-165 and VEGF-145.
CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer
CC with PlGF (By similarity).
CC -1- SUBCELLULAR LOCATION: VEGF121 is acidic and freely secreted.
CC VEGF165 is more basic, has heparin-binding properties and,
CC although a significant proportion remains cell-associated, most is
CC freely secreted. VEGF189 is very basic; it is cell-associated
CC after secretion and is bound avidly by heparin and the
CC extracellular matrix, although it may be released as a soluble
CC form by heparin, heparinase or plasmin.
CC -1- ALTERNATIVE PRODUCTS:
CC Event-Alternative splicing; Named isoforms=7;
CC Comment=Experimental confirmation may be lacking for some
CC isoforms;
CC Name=VEGF206;
CC IsoId=p15692-1; Sequence=Displayed;
CC Name=VEGF189;
CC IsoId=p15692-2; Sequence=VSP_004622;

```

```

Query Match 100.0%; Score 129; DB 1; Length 232;

Best Local Similarity 100.0%; Pred. No. 7,7e-12;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNDRCKARQLEINERTCR 23
Db 204 CSCKNDRCKARQLEINERTCR 226
|||||

RESULT 9
ID VEGA_CAVPO STANDARD; PRT; 164 AA.
AC p26617;
DT 01-AUG-1992 (Rel. 23, Created)
DT 01-AUG-1992 (Rel. 23, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last annotation update)
DE Vascular endothelial growth factor A (VEGF-A) (Vascular permeability
DE factor) (VFP).
GN VEGF OR VEGFA.
OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystriognathi; Cavidae; Cavia.
OX NCBI_TaxID=10141;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Blle duct;
RA Berse B.;
RL Submitted (JAN-1992) to the EMBL/GenBank/DBJ databases.
CC -1- FUNCTION: Growth factor active in angiogenesis, and endothelial
CC cell growth. Induces endothelial proliferation and vascular
CC permeability (By similarity).
CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer
CC with PlGF (By similarity).
CC -1- SUBCELLULAR LOCATION: Secreted but remains associated to cells or
CC to the extracellular matrix unless released by heparin (By
CC similarity).
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL Outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC
CC EMBL: M84230; AAA37057.1; -
CC HSSP: P15692; 1VGH.
CC InterPro: IPR000072; PD_growth_factor.
CC Pfam: PF00341; PDGF; 1.
CC ProDom: PD001629; PD_growth_factor; 1.
CC SMART: SM00141; PDGF; 1.
CC PROSITE: PS00249; PDGF_1; 1.
CC PROSITE: PS50278; PDGF_2; 1.
CC MitoGen: Angiogenesis; Growth factor; Glycoprotein.
FT DISULFID 25 67 BY SIMILARITY.
FT DISULFID 56 101 BY SIMILARITY.
FT DISULFID 60 103 BY SIMILARITY.
FT DISULFID 50 50 INTERCHAIN (BY SIMILARITY).
FT DISULFID 59 59 INTERCHAIN (BY SIMILARITY).
FT CARBOHYD 74 74 N-LINKED (GLCNAC...) (POTENTIAL).
SQ SEQUENCE 164 AA; 19330 MW; 9EB86A81A9D5DC44 CRC64;

Query Match 97.7%; Score 126; DB 1; Length 164;
Best Local Similarity 95.7%; Pred. No. 1,5e-11;
Matches 22; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNDRCKARQLEINERTCR 23
Db 136 CSCKNDRCKARQLEINERTCR 158
|||||

RESULT 10
VEGA_CHICK

```

ID VEGA\_CHICK STANDARD; PRT; 216 AA.  
AC P52582; 091420;  
DT 01-OCT-1996 (Rel. 34, Created)  
DT 15-JUL-1998 (Rel. 36, Last sequence update)  
DT 15-SEP-2003 (Rel. 42, Last annotation update)  
DE Vascular endothelial growth factor A precursor (VEGF-A) (Vascular permeability factor) (VPF).  
DE VEGF OR VEGFA.  
GN VEGF.  
OS Gallus gallus (Chicken), and  
OS Coturnix coturnix japonica (Japanese quail).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae; Gallus.  
OC NCBI\_TaxID=9031, 93934;  
OX [1]  
RN SEQUENCE FROM N.A.  
RP SPECIES=Chicken; TISSUE=Heart;  
RA Takahashi T.;  
RT "Chick embryonic ventricular myocytes VEGF";  
RL Submitted (FEB-1998) to the EMBL/GenBank/DBJ databases.  
[2]  
RN SEQUENCE FROM N.A. (ISOFORMS VEGF-190; VEGF-166 AND VEGF-146).  
RP SPECIES=C. japonica; TISSUE=Embryo;  
RX MEDLINE=96005007; PubMed=7556923;  
RA Flame I., von Reutern M., Drexler H.C., Syed-Ali S., Risau W.;  
RT "Overexpression of vascular endothelial growth factor in the avian embryo induces hypervascularization and increased vascular permeability without alterations of embryonic pattern formation.";  
RL Dev. Biol. 171:399-414(1995).  
[3]  
RN SEQUENCE OF 60-187 FROM N.A. (ISOFORMS VEGF-190 AND VEGF-166).  
RP SPECIES=C. japonica;  
RX MEDLINE=95301109; PubMed=7781909;  
RA Flame I., Breier G., Risau W.;  
RT "Vascular endothelial growth factor (VEGF) and VEGF receptor 2 (flk-1) are expressed during vascular angiogenesis and vascular differentiation in the quail embryo.";  
RL Dev. Biol. 169:699-712(1995).  
CC -1- FUNCTION: Growth factor active in angiogenesis, vasculogenesis and endothelial cell growth. It induces endothelial cell proliferation, promotes cell migration, inhibits apoptosis, and induces permeabilization of blood vessels. It binds to the VEGFR1/Flt-1 and VEGFR2/Kdr receptors and to heparan sulfate and heparin (by similarity).  
CC -1- SUBUNIT: Homodimer; disulfide-linked. Also found as heterodimer with PlGF (by similarity).  
CC -1- ALTERNATIVE PRODUCTS:  
CC Event-Alternative splicing; Named isoforms=3;  
CC Comment-Additional isoforms seem to exist;  
CC Name-VEGF-190;  
CC IsoId=P52582-1; Sequence=Displayed;  
CC Name-VEGF-166;  
CC IsoId=P52582-2; Sequence=VSP\_004633; VSP\_004634;  
CC Note-Has been shown to exist only in quail so far;  
CC Name-VEGF-146;  
CC IsoId=P52582-3; Sequence=VSP\_004635; VSP\_004636;  
CC Note-Has been shown to exist only in quail so far;  
CC -1- TISSUE SPECIFICITY: Abundantly and equally expressed in heart and liver. In kidney glomeruli, brain and yolk sac, VEGF-166 is 5- to 10-times more abundant than VEGF-190.  
CC -1- DEVELOPMENTAL STAGE: VEGF-166 is expressed early at day 1 and is upregulated during gastrulation. Expression of VEGF-190 is detectable only from day 2.  
CC -1- DOMAIN: VEGF-190 contains a basic insert which acts as a cell retention signal.  
CC -1- SIMILARITY: BELONGS TO THE PDGF/VEGF FAMILY OF GROWTH FACTORS.  
CC -----  
CC This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation at the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See <http://www.isb-sib.ch/announce/>)

CC or send an email to [license@isb-sib.ch](mailto:license@isb-sib.ch).  
CC -----  
CC EMBL: AB011078; BAA24925.1;  
DR EMBL: S79680; AAB35371.1;  
DR HSSP: P15692; 1VGH.  
DR Interpro: IPR000072; PD\_growth\_factor.  
DR Pfam: PF00341; PDGF\_1.  
DR ProDom: PD001629; PD\_growth\_factor; 1.  
DR SMART: SM00141; PDGF\_1.  
DR PROSITE: PS00249; PDGF\_1; 1.  
DR PROSITE: PS50278; PDGF\_2; 1.  
KW Mitogen; Angiogenesis; Growth factor; Glycoprotein; Signal;  
KW Heparin-binding; Alternative splicing; Multigene family.  
FT SIGNAL 1 26  
FT CHAIN 27 216  
FT DISULFID 52 94  
FT DISULFID 83 128  
FT DISULFID 87 130  
FT DISULFID 77 77  
FT DISULFID 86 86  
FT CARBOHYD 101 101  
FT VARSPPLIC 142 142  
FT VARSPPLIC 143 166  
FT VARSPPLIC 166 166  
FT VARSPPLIC 167 210  
FT VARSPPLIC 167 210  
SQ SEQUENCE 216 AA; 25203 MW; 82B659C2F6FCDA7 CRC64;  
Query Match 90.7%; Score 117; DB 1; Length 216;  
Best Local Similarity 91.3%; Pred. No. 4e-10;  
Matches 21; Conservative 1; Mismatches 1; Indels 0; Gaps 0;  
QY 1 CSCKNFTDSRCARQLENERCTR 23  
DB 188 CSCKFTDSRCRSQLENERCTR 210  
|||||  
RESULT 11  
YQGL\_BACSU STANDARD; PRT; 126 AA.  
AC P54503;  
DT 01-OCT-1996 (Rel. 34, Created)  
DT 01-OCT-1996 (Rel. 34, Last sequence update)  
DT 28-FEB-2003 (Rel. 41, Last annotation update)  
DE Hypothetical protein y99Z.  
GN YQGL.  
OS Bacillus subtilis.  
OC Bacteria; Firmicutes; Bacillales; Bacillaceae; Bacillus.  
OX NCBI\_TaxID=1423;  
RN [1]  
RP SEQUENCE FROM N.A.  
RX STRAIN=168 / JH642;  
RA MEDLINE=97124195; PubMed=8969508;  
RA Mizuno M., Masuda S., Takemaru K.-I., Hosono S., Sato T., Takeuchi M., Kobayashi Y.;  
RT "Systematic sequencing of the 283 kb 210 degrees-232 degrees region of the Bacillus subtilis genome containing the skin element and many sporulation genes";  
RT Microbiology 142:3103-3111(1996).  
RL [2]  
RP SEQUENCE FROM N.A.  
RX STRAIN=168;  
RA MEDLINE=98044033; PubMed=9384377;  
RA Kunst F., Ogasawara N., Moszer I., Albertini A.M., Alloni G., Azevedo V., Bertero M.G., Bessieres P., Boloitin A., Borchert S., Borriss R., Boursier L., Brans A., Braun M., Brigelli S.C., Bron S., Brouillet S., Brunsch C.V., Caldwell B., Capuano V., Carter N.M., Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A., Denzot F., Devine K.M., Dusterhoft A., Ehrlich S.D., Emerson P.T., Eutlian K.D., Errington J., Fabret C., Ferrari E., Foulger D.,

```

RA Fritz C., Fujita M., Fujita Y., Fuma S., Gallizzi A., Galleron N.,
RA Ghim S.Y., Glaser P., Goffeau A., Golightly E.J., Grandi G.,
RA Guisepi G., Guy B.J., Haga K., Haeche J., Harwood C.R., Henaut A.,
RA Hilbert H., Holsappel S., Hosono S., Hullo M.F., Ilaya M., Jones L.,
RA Joris B., Karamata D., Kasahara Y., Klaerr-Blanchard M., Klein C.,
RA Kobayashi Y., Koetter P., Konigstein G., Krogh S., Kumano M.,
RA Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,
RA Lee S.M., Levine A., Liu H., Masuda S., Manuel C., Medigue C.,
RA Medina N., Mellado R.P., Mizuno M., Moestl D., Nakai S., Noback M.,
RA Noore D., O'Reilly M., Ogawa K., Ogihara A., Oudega B., Park S.H.,
RA Parro V., Pohl T.M., Portetelle D., Portolillo S., Prescott A.M.,
RA Preezen E., Puig P., Purnelle B., Rapoport G., Rey M., Reynolds S.,
RA Rieger M., Rivolta C., Rocha E., Roche B., Rose M., Sadate Y.,
RA Sato T., Seaman E., Schleich S., Schroeter R., Scoffone F.,
RA Sekiguchi J., Sekowska A., Seror S.J., Serro P., Shin B.S., Soldo B.,
RA Sorokin A., Tacconi E., Takagi T., Takahashi H., Takemaru K.,
RA Takuchi M., Yamakoshi A., Tanaka T., Terpstra P., Tonon A.,
RA Tosato V., Uchiyama S., Vandenbol M., Vannier F., Vassarelli A.,
RA Viari A., Wambuit R., Wedler E., Wedler H., Wetzenecker T.,
RA Winters P., Wipat A., Yamamoto H., Yamane K., Yasunoto K., Yata K.,
RA Yoshida K., Yoshikawa H.F., Zumbstein E., Yoshikawa H., Zanchin A.,
RT "The complete genome sequence of the Gram-positive bacterium Bacillus
RT subtilis."
RT Nature 390:249-256(1997).
RL -1 SIMILARITY: BELONGS TO THE ARSC FAMILY.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation-
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
CC EMBL: D84432; BAA12529.1; -
CC EMBL: 299116; CAB14408.1; -
CC PIR: C69958; C69958.
CC Subtilisin: BG11693; Yggf.
CC InterPro: IPR006504; Arscn_related.
CC InterPro: IPR006660; Arsen_reductase.
CC Pfam: PF03960; Arsc.1.
CC TIGRfams: TIGR01617; arsc_related.1.
CC DR Hypothetical protein; Oxidoreductase; Complete proteome.
CC KW SEQUENCE 126 AA; 14824 MW; AD124DCFC0CDE10E CRC64;
CC SQ
Query Match 39.5%; Score 51; DB 1; Length 126;
Best Local Similarity 52.6%; Pred. No. 0.94;
Matches 10; Conservative 2; Mismatches 7; Indels 0; Gaps 0;
QY 2 SCKNTDSRCKARQLELNER 20
DB 15 SCKRTKHWLKAHQLEFNER 33

```

```

RA Oki T., Yamazaki K., Kuromitsu J., Okada M., Tanaka I.;
RT "cDNA cloning and mapping of a novel subtype of
RT glutamate-fructose-6-phosphate amidotransferase (GFAT2) in human and
RT mouse."
RL Genomics 57:227-234(1999).
CC -1 FUNCTION: CONTROLS THE FLUX OF GLUCOSE INTO THE HEXOSAMINE
CC PATHWAY. MOST LIKELY INVOLVED IN REGULATING THE AVAILABILITY OF
CC PRECURSORS FOR N- AND O-LINKED GLYCOSYLATION OF PROTEINS.
CC -1 CATALYTIC ACTIVITY: L-glutamine + D-fructose 6-phosphate = L-
CC glutamate + D-glucosamine 6-phosphate.
CC -1 PATHWAY: Hexosamine biosynthesis; first (rate-limiting) step.
CC -1 SIMILARITY: IN THE C-TERMINAL SECTION, BELONGS TO THE SIS FAMILY.
CC GFAT SUBFAMILY.
CC -1 SIMILARITY: Contains 1 type-2 glutamine amidotransferase domain.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
CC EMBL: AB016778; BAA74727.1; -
CC EMBL: AB016780; BAA74729.1; -
CC DR HSSP: P17169; IGDO.
CC DR MEROPS: C44.971; -.
CC DR MGD: MG1:133883; Gfpt2.
CC InterPro: IPR000583; GFATase_2.
CC InterPro: IPR005855; Gfms.
CC InterPro: IPR001347; SIS.
CC Pfam: PF00310; GFATase_2; 1.
CC Pfam: PF01380; SIS; 2.
CC TIGRfams: TIGR01135; g1ms; 1.
CC DR PROSITE: PS00443; GATASE_TYPE_II; 1.
CC TRANSFERASE: aminotransferase; Glutamine amidotransferase.
CC INIT_MER 0 BY SIMILARITY.
CC ACT_SITE 1 1 GATASE (BY SIMILARITY)
CC DOMAIN 1 206 GLUTAMINE AMIDOTRANSFERASE (POTENTIAL).
CC SEQUENCE 681 AA; 76877 MW; 34C3FF1CB2EB715F CRC64;
CC SQ
Query Match 37.2%; Score 48; DB 1; Length 681;
Best Local Similarity 36.4%; Pred. No. 15;
Matches 8; Conservative 4; Mismatches 10; Indels 0; Gaps 0;
QY 1 CSCKNTDSRCKARQLELNERTC 22
DB 225 CNIENYKNICKTRMKRLDSSSTC 246

```

```

RESULT 12
GFA2_MOUSE STANDARD; PRT; 681 AA.
AC Q92229;
DT 30-MAY-2000 (Rel. 39, Created)
DT 30-MAY-2000 (Rel. 39, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last annotation update)
DE Glucosamine-fructose-6-phosphate aminotransferase [isomerizing] 2
DE (EC 2.6.1.16) (Hexosephosphate aminotransferase 2) (D-fructose-6-
DE phosphate amidotransferase 2) (GFAT 2) (GFAF2).
GN Gfpt2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_Taxid=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=Swiss Webster, and C57BL/6J;
RX MEDLINE=99216416; PubMed=10198162;

```

```

RESULT 13
PEP1_YEAST STANDARD; PRT; 1579 AA.
AC P32319;
DT 01-OCT-1993 (Rel. 27, Created)
DT 01-OCT-1993 (Rel. 27, Last sequence update)
DT 15-JUL-1999 (Rel. 38, Last annotation update)
DE Vacuolar protein sorting/targeting protein PEP1 precursor (Vacuolar
DE carboxypeptidase sorting receptor VPS10) (Carboxypeptidase Y
DE receptor) (CPY receptor).
GN PEP1 OR VPS10 OR YBL017C OR YBL0302 OR YBL03.22.
OS Saccharomyces cerevisiae (Baker's yeast).
OC Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetes;
OC Saccharomycetales; Saccharomycetaceae; Saccharomyces.
OX NCBI_Taxid=4932;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=S288C;
RX MEDLINE=93070614; PubMed=1441754;
RT "An 11.4 kb DNA segment on the left arm of yeast chromosome II
RT carries the carboxypeptidase Y sorting gene PEP1, as well as ACH1,
RT FUS3 and a putative ARS."

```

RL	Yeast 8:769-776(1992).	
RN	[2]	
RP	SEQUENCE FROM N.A.	
RA	MEDLINE:94243924; PubMed=8187177;	
RX	Marcusson E.G., Horadzovsky B.F., Cereghino J.L., Charakhanian E.,	
RT	Emr S.D.;	
RT	"The sorting receptor for yeast vacuolar carboxypeptidase Y is	
RT	encoded by the VPS10 gene."	
RL	Cell 77:579-586(1994).	
CC	-1- FUNCTION: INVOLVED IN THE INTRACELLULAR SORTING AND DELIVERY OF	
CC	SOLUBLE VACUOLAR PROTEINS, SEEMS TO SPECIFICALLY INTERACT WITH	
CC	CARBOXYPEPTIDASE Y (CPY). MAY EXERCISE MULTIPLE ROUNDS OF SORTING	
CC	BY CYCLING BETWEEN THE LATE GOLGI AND A PREVACUOLAR ENDOSOME-LIKE	
CC	COMPARTMENT. BINDS THE GOLGI-MODIFIED P2 FORM OF CPY, AND THIS	
CC	INTERACTION IS DEPENDENT ON THE PRESENCE OF AN INTACT CPY VACUOLAR	
CC	PROTEIN SORTING SIGNAL.	
CC	-1- SUBCELLULAR LOCATION: TYPE I MEMBRANE PROTEIN. LATE GOLGI	
CC	COMPARTMENT.	
CC	-1- DOMAIN: THE LUMENAL DOMAIN CONTAINS TWO REGIONS OF APPROXIMATELY	
CC	650 AA THAT EXHIBIT 20% IDENTITY. THE CYTOPLASMIC DOMAIN MAY SERVE	
CC	AS A GOLGI RETENTION/RECYCLING SIGNAL.	
CC	-1- SIMILARITY: BELONGS TO THE PEP1 FAMILY OF MEMBRANE GLYCOPROTEINS.	
CC	-----	
CC	This SWISS-PROT entry is copyright. It is produced through a collaboration	
CC	between the Swiss Institute of Bioinformatics and the EMBL outstation -	
CC	the European Bioinformatics Institute. There are no restrictions on its	
CC	use by non-profit institutions as long as its content is in no way	
CC	modified and this statement is not removed. Usage by and for commercial	
CC	entities requires a license agreement (See <a href="http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch">http://www.isb-sib.ch/announce/</a>	
CC	or send an email to <a href="mailto:license@isb-sib.ch">license@isb-sib.ch</a> ).	
CC	-----	
DR	EMBL; X68577; CAA48568.1; -;	
DR	EMBL; U35778; CAA84836.1; -;	
DR	EMBL; U07621; AAA18831.1; -;	
DR	PIR; S25329; S25329.	
DR	SGD; S0000113; PEP1.	
DR	GO; GO:0006623; P:Protein-vacuolar targeting; IMP.	
DR	GO; GO:007034; P:vacuolar transport; IMP.	
DR	InterPro; IPR002860; GH_BNR.	
DR	InterPro; IPR006581; VPS10.	
DR	Pfam; PF02012; BNR; 13.	
DR	SMART; SM00602; VPS10; 2.	
KW	Transmembrane; Glycoprotein;	
FT	SIGNAL	1 21
FT	CHAIN	22 1579
FT	DOMAIN	22 1397
FT	TRANSMEM	1398 1414
FT	DOMAIN	1415 1579
FT	NP_BIND	180 187
FT	CARBOHYD	96 96
FT	CARBOHYD	170 170
FT	CARBOHYD	447 447
FT	CARBOHYD	793 793
FT	CARBOHYD	1010 1010
FT	CARBOHYD	1303 1303
FT	CONFLICT	19 19
FT	CONFLICT	38 38
FT	CONFLICT	54 54
FT	CONFLICT	74 74
FT	CONFLICT	94 99
FT	CONFLICT	119 126
FT	CONFLICT	152 153
FT	CONFLICT	165 167
FT	CONFLICT	202 202
FT	CONFLICT	214 214
FT	CONFLICT	283 283
FT	CONFLICT	378 378
FT	CONFLICT	410 410
FT	CONFLICT	426 426
FT	CONFLICT	774 774
FT	CONFLICT	1089 1089
FT	CONFLICT	1266 1266
CC	Receptor; Signal; ATP-binding; Repeat.	
CC	POTENTIAL.	
CC	VACUOLAR PROTEIN SORTING/TARGETING	
CC	PROTEIN PEP1.	
CC	LUMENAL (POTENTIAL).	
CC	POTENTIAL.	
CC	CYTOPLASMIC (POTENTIAL).	
CC	ATP (POTENTIAL).	
CC	N-LINKED (GLCNAC. . .) (POTENTIAL).	
CC	N-LINKED (GLCNAC. . .) (POTENTIAL).	
CC	N-LINKED (GLCNAC. . .) (POTENTIAL).	
CC	N-LINKED (GLCNAC. . .) (POTENTIAL).	
CC	N-LINKED (GLCNAC. . .) (POTENTIAL).	
CC	N-LINKED (GLCNAC. . .) (POTENTIAL).	
CC	T -> I (IN REF. 2).	
CC	D -> E (IN REF. 2).	
CC	T -> A (IN REF. 2).	
CC	G -> D (IN REF. 2).	
CC	AMNYS -> SMYSR (IN REF. 2).	
CC	GESTISPE -> EXNISR (IN REF. 2).	
CC	MISSING (IN REF. 2).	
CC	P -> A (IN REF. 2).	
CC	S -> G (IN REF. 2).	
CC	L -> I (IN REF. 2).	
CC	F -> L (IN REF. 2).	
CC	S -> N (IN REF. 2).	
CC	M -> V (IN REF. 2).	
CC	K -> R (IN REF. 2).	
CC	S -> F (IN REF. 2).	
CC	G -> S (IN REF. 2).	

FT	CONFLICT	1476	1476	A > V (IN REF. 2).
RT	CONFLICT	1557	1557	T -> A (IN REF. 2).
SO	SEQUENCE	1579	AA: 177776	MM: C778A0400612ECP4 CRC64;
Query Match		37.28;	Score 48;	DB 1; Length 1579;
Best Local Similarity		34.08;	Pred. No. 35;	
Matches	8;	Conservative	3;	Mismatches 12; Indels 0; Gaps
OY		1	CSCKNTDSCRAROLEINERTCR 23	
DB		1304	CSCTROFDECDYMFYKANGOTCK 1326	
RESULT 14				
JAG1_HUMAN				
ID	JAG1_HUMAN	STANDARD;	PRT;	1218 AA.
AC	P78504	014902; 015122; 015816;		
DT	28-FEB-2003	(Rel. 41, Created)		
DT	28-FEB-2003	(Rel. 41, Last sequence update)		
DT	28-FEB-2003	(Rel. 41, Last annotation update)		
DE	Jagged 1 precursor (Jagged1) [h1].			
GN	JAG1.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.			
OX	NCBI_TaxID=9606;			
RN				
RP				
RS	SEQUENCE FROM N.A.			
RX	MEDLINE=97422615; PubMed=9268641;			
RT	Oda T., Elkhloun A.G., Meltzer P.S., Chandrasekharappa S.C.;			
RT	"Identification and cloning of the human homolog (JAG1) of the rat			
RL	Jagged1 gene from the Alagille syndrome critical region at 20p12.1;			
RL	Genomics 43:376-379(1997).			
[2]				
RP	SEQUENCE FROM N.A., AND VARIANT AGS CYS-184.			
RC	TISSUE=Bone marrow;			
RC	MEDLINE=97351506; PubMed=9207788;			
RA	Li L., Krantz I.D., Deng Y., Gehan A., Banta A.B., Collins C.C.;			
RA	Qi M., Trask B.J., Kuo W.L., Cochran J., Costa T., Pierpont M.E.M.;			
RA	Rand E.B., Piccoli D.A., Hood L., Splinter N.B.;			
RT	"Alagille syndrome is caused by mutations in human Jagged1, which			
RT	encodes a ligand for Notch1.";			
RL	Nat. Genet. 16:243-251(1997).			
[3]				
RP	SEQUENCE FROM N.A., AND FUNCTION.			
RP	MEDLINE=98122342; PubMed=9462510;			
RA	Li L., Milner L.A., Deng Y., Iwata M., Banta A.B., Graf L.B.;			
RA	Marconini S., Friedman C., Trask B.J., Hood L., Torok-Storey B.;			
RT	"The human homolog of rat Jagged1 expressed by marrow stroma inhibits			
RT	differentiation of 320 cells through interaction with Notch1.";			
RL	Immunity 8:43-55(1998).			
[4]				
RP	SEQUENCE FROM N.A.			
RC	TISSUE=Cervical carcinoma;			
RC	MEDLINE=99262417; PubMed=10329626;			
RA	Bash J., Zong W.-X., Banga S., RIVERA A., Ballard D.W., Ron Y.;			
RA	Gellinas C.;			
RT	"Rel/NF-kappaB can trigger the Notch signaling pathway by inducing the			
RT	expression of Jagged1, a ligand for Notch receptors.";			
RL	EMBO J. 18:2803-2811(1999).			
[5]				
RP	SEQUENCE FROM N.A.			
RP	MEDLINE=99180765; PubMed=10079256;			
RA	Gray G.E., Mann R.S., Mitsidis E., Henricke D., Carcangu M.-L.;			
RA	Banks A., Leiman J., Ward D., Ish-Horowitz D., Aravanis-Tsakonas S.;			
RT	"Human ligands of the Notch receptor.";			
RL	Am. J. Pathol. 154:785-794(1999).			
[6]				
RP	SEQUENCE FROM N.A.			
RP	MEDLINE=21638749; PubMed=11780052;			
RA	Deloukas P., Matthews L.H., Ashurst J., Burton J., Gilbert J.G.R.;			
RA	Jones M., Stavris G., Almeida J.P., Babbage A.K., Bagguley C.L.;			
RA	Balley J., Barlow K.F., Bates K.N., Beard L.M., Beare D.M.;			



RA Beasley O.P., Bird C.P., Blakey S.E., Bridgeman A.M., Brown A.J.,  
 RA Buck D., Burrill W.D., Butler A.P., Carder C., Carter N.P.,  
 RA Chapman J.C., Clamp M., Clark G., Clark L.N., Clark S.Y., Clee C.M.,  
 RA Clegg S., Copley V.E., Collier R.E., Connor R.E., Coty N.R.,  
 RA Coulson A., Coville G.J., Deadman R., Dhani P.D., Dunn M.,  
 RA Ellington A.G., Frankland J.A., Fraser A., French L., Garner P.,  
 RA Griffiths D.V., Griffiths C., Griffiths M.N.D., Gwilliam R., Hall R.E.,  
 RA Hammond S., Harley J.L., Heath P.D., Ho S., Holden J.L., Howden P.J.,  
 RA Huckle E., Hunt A.R., Hunt S.E., Jekosch K., Johnson C.M., Johnson D.,  
 RA Kay M.P., Kimberley A.M., King A., Knights A., Laird G.K., Lawlor S.,  
 RA Leivaesalho M.H., Levesha M.A., Lloyd C., Lloyd D.M., Lovell J.D.,  
 RA Marsh S.L., Martin S.L., McConachie L.J., McElay K., McMurray A.A.,  
 RA Maltre S.A., Mistry D., Moore M.J.F., Mullikin J.C., Nickerson T.,  
 RA Oliver K., Parker A., Patel R., Pearce T.A.V., Peck A.I.,  
 RA Phillimore B.J.C.T., Prathalingam S.R., Plumb R.W., Ramsay H.,  
 RA Rice C.M., Ross M.T., Scott C.E., Senta H.K., Showkhen R., Sims S.,  
 RA Skuce C.D., Smith M.L., Soderlund C., Steward C.A., Sulston J.E.,  
 RA Swann R.M., Sycamore N., Taylor R., Tee L., Thomas D.W., Thorpe A.,  
 RA Tracey A., Tromans A.C., Vaudin M., Wall M., Wallis J.M.,  
 RA Whitehead S.L., Whitaker P., Willey D.L., Williams L., Williams S.A.,  
 RA Wilming L., Wray P.W., Hubbard T., Durbin R.M., Bentley D.R., Beck S.,  
 RA Rogers J.,  
 RT "The DNA sequence and comparative analysis of human chromosome 20.",  
 RL Nature 414:865-871(2001).  
 RN [17]  
 RP SEQUENCE OF 14-1227 FROM N.A.  
 RC TISSUE-Umbilical vein endothelial cells;  
 RX MEDLINE=97115768; PubMed=8955070;  
 RA Zimrin A.B., Pepper M.S., McMahon G.A., Nguyen F., Montesano R.,  
 RA Maciag T.,  
 RT "An antisense oligonucleotide to the notch ligand jagged enhances  
 RT fibroblast growth factor-induced angiogenesis in vitro.",  
 RL J. Biol. Chem. 271:32499-32502(1996).  
 RN [8]  
 RP DISEASE.  
 RX MEDLINE=97351505; PubMed=9207787;  
 RA Oda T., Elkahoul A.G., Pike B.L., Okajima K., Krantz I.D., Genin A.,  
 RA Piccoli D.A., Meltzer P.S., Spinner N.B., Collins F.S.,  
 RA Chandrasekharappa S.C.,  
 RT "Mutations in the human jagged1 gene are responsible for Alagille  
 RT syndrome.",  
 RL Nat. Genet. 16:235-242(1997).  
 RN [9]  
 RP DEVELOPMENTAL STAGE.  
 RX MEDLINE=20436345; PubMed=10978356;  
 RA Jones E.A., Clement-Jones M., Wilson D.I.,  
 RT "Jagged1 expression in human embryos: correlation with the Alagille  
 RT syndrome phenotype.",  
 RL J. Med. Genet. 37:663-668(2000).  
 RN [10]  
 RP VARIANTS AGS CYS-184 AND HIS-184.  
 RX MEDLINE=98254456; PubMed=9585603;  
 RA Krantz I.D., Colliton R.P., Genin A., Rand E.B., Li L., Piccoli D.A.,  
 RA Spinner N.B.,  
 RT "Spectrum and frequency of jagged1 (JAG1) mutations in Alagille  
 RT syndrome patients and their families.",  
 RL Am. J. Hum. Genet. 62:1361-1369(1998).  
 RN [11]  
 RP VARIANTS AGS HIS-79; THR-127; ARG-129; LEU-163; GLY-184; SER-187;  
 RP GLY-229; PHE-284; CYS-288; PHE-438; SER-731 AND ARG-740.  
 RX MEDLINE=99238888; PubMed=10220506;  
 RA Crosnier C., Driancourt C., Reynaud N., Dhome-Pollet S., Pollet N.,  
 RA Bernard O., Hachouel M., Meunier-Rotival M.,  
 RT "Mutations in JAGGED1 gene are predominantly sporadic in Alagille  
 RT syndrome.",  
 RL Gastroenterology 116:1141-1148(1999).  
 RN [12]  
 RP VARIANTS AGS THR-152 AND LEU-184.  
 RX MEDLINE=20004539; PubMed=10533065;  
 RA Pilla G., Uda M., Macis D., Frau F., Crisponi L., Balli F.,  
 RA Barbera C., Colombo C., Frediani T., Gatti R., Iorio R., Marazzi M.G.,  
 RA Marcellini M., Musumeci S., Nebbia G., Vajro P., Ruffa G., Zancan L.,  
 RA Cao A., Devigili S.,

RT "Jagged-1 mutation analysis in Italian Alagille syndrome patients.",  
 RL Hum. Mutat. 14:394-400(1999).  
 RN [13]  
 RP VARIANTS AGS TYR-229 AND ARG-386.  
 RX MEDLINE=20514559; PubMed=11058898;  
 RA Heritage M.L., Macmillan J.C., Colliton R.P., Genin A., Spinner N.B.,  
 RA Anderson G.J.,  
 RT "Jagged1 (JAG1) mutation detection in an Australian Alagille syndrome  
 RT population.",  
 RL Hum. Mutat. 16:408-416(2000).  
 RN [14]  
 RP VARIANT TOF ASP-274.  
 RX MEDLINE=21067871; PubMed=11152664;  
 RA Eldadah Z.A., Hanosh A., Biery N.J., Montgomery R.A., Duke M.,  
 RA Elkins R., Dietz H.C.,  
 RT "Familial tetralogy of Fallot caused by mutation in the jagged1  
 RT gene.",  
 RL Hum. Mol. Genet. 10:163-169(2001).  
 RN [15]  
 RP VARIANT AGS SFR-37.  
 RX MEDLINE=21096916; PubMed=11157803;  
 RA Morrisette J.D., Colliton R.P., Spinner N.B.,  
 RT "Defective intracellular transport and processing of JAG1 missense  
 RT mutations in Alagille syndrome.",  
 RL Hum. Mol. Genet. 10:405-413(2001).  
 RN [16]  
 RP VARIANTS AGS PHE-220 AND ARG-753.  
 RX MEDLINE=20579880; PubMed=11139247;  
 RA Crosnier C., Driancourt C., Reynaud N., Hachouel M.,  
 RA Meunier-Rotival M.,  
 RT "Fifteen novel mutations in the JAGGED1 gene of patients with Alagille  
 RT syndrome.",  
 RL Hum. Mutat. 17:72-73(2001).  
 RN [17]  
 RP FUNCTION: Ligand for multiple Notch receptors and involved in the  
 CC mediation of Notch signaling. May be involved in cell-fate  
 CC decisions during hematopoiesis. Seems to be involved in early  
 CC and late stages of mammalian cardiovascular development. Inhibits  
 CC myoblast differentiation (By similarity). Enhances fibroblast  
 CC growth factor-induced angiogenesis (in vitro).  
 CC SUBUNIT: Interacts with NOTCH1, NOTCH2 AND NOTCH3 (By similarity).  
 CC TISSUE SPECIFICITY: Widely expressed in adult and fetal tissues.  
 CC In cervix epithelium expressed in undifferentiated subcolumnar  
 CC reserve cells and squamous metaplasia. Expression is up-regulated  
 CC in cervical squamous cell carcinoma. Expressed in bone marrow cell  
 CC line HS-27a which supports the long-term maintenance of immature  
 CC progenitor cells.  
 CC DEVELOPMENTAL STAGE: Expressed in 32-52 days embryos in the distal  
 CC cardiac outflow tract and pulmonary artery, major arteries, portal  
 CC vein, optic vesicle, oocyte, branchial arches, metanephros, and in  
 CC pancreas, mesocardium, around the major bronchial branches, and in  
 CC the neural tube.  
 CC DISEASE: Defects in JAG1 are the cause of Alagille syndrome (AGS),  
 CC an autosomal dominant developmental disorder that affects structures  
 CC in the liver, heart, skeleton, eye, kidney, and other organs.  
 CC DISEASE: Defects in JAG1 are associated with right heart  
 CC obstructive disease variants of Tetralogy of Fallot (TOF), the  
 CC most common form of complex congenital heart disease.  
 CC SIMILARITY: Contains 15 EGF-like domains.  
 CC SIMILARITY: Contains 1 DSL domain.  
 CC CAUTION: Ref.7 sequence differs from that shown due to a  
 CC frameshift in position 1187.  
 CC -----  
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration  
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -  
 CC the European Bioinformatics Institute. There are no restrictions on its  
 CC use by non-profit institutions as long as its content is in no way  
 CC modified and this statement is not removed. Usage by and for commercial  
 CC entities requires a license agreement (see <http://www.isb-sib.ch/announce/>)  
 CC -----  
 CC Query Match 36.4%; Score 47; DB 1; Length 1218;  
 CC Best Local Similarity 37.5%; Pred. No. 37;  
 CC Matches 9; Conservative 3; Mismatches 10; Indels 2; Gaps 1;

OY 1 CSCKN-TDSRCKAROLELNTC 22  
 DB 691 CDCRNGWKGTCHSRDSQDEATC 714

RESULT 15  
 JAG1\_MOUSE STANDARD: PRT: 1218 AA.  
 AC O90XX0;  
 DT 28-FEB-2003 (Rel. 41, Created)  
 DT 28-FEB-2003 (Rel. 41, Last sequence update)  
 DT 28-FEB-2003 (Rel. 41, Last annotation update)  
 GN Jagged 1 precursor (Jagged1).  
 GN JAG1.  
 OS Mus musculus (Mouse).  
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Mus.  
 OX NCBI\_TaxID=10090;  
 RN [1]  
 RP SEQUENCE FROM N.A., AND RECEPTOR INTERACTION.  
 RC STRAIN=Swiss Webster / NIH;  
 RX MEDLINE=20020271; PubMed=10551863;  
 RA Shimizu K., Chiba S., Kumano K., Hosoya N., Takahashi T., Kanda Y.,  
 Hanada Y., Yasaki Y., Hirai H.;  
 RT "Mouse Jagged1 physically interacts with Notch2 and other Notch  
 RT receptors: assessment by quantitative methods.";  
 RL J. Biol. Chem. 274:32961-32969(1999).  
 RN [2]  
 RP TISSUE SPECIFICITY.  
 RX MEDLINE=20025753; PubMed=10556292;  
 RA Loomes K.M., Underkoffler U.A., Morabito J., Gottlieb S.,  
 Piccoli D.A., Spinner N.B., Baldwin H.S., Oakey R.J.;  
 RT "The expression of Jagged1 in the developing mammalian heart  
 RT correlates with cardiovascular disease in Alagille syndrome.";  
 RL Hum. Mol. Genet. 8:2443-2449(1999).  
 CC -1- FUNCTION: Ligand for multiple Notch receptors and involved in the  
 CC mediation of Notch signaling. May be involved in cell-fate  
 CC decisions during hematopoiesis. Seems to be involved in early  
 CC and late stages of mammalian cardiovascular development. Inhibits  
 CC myoblast differentiation (By similarity). May regulate fibroblast  
 CC growth factor-induced angiogenesis.  
 CC -1- SUBUNIT: Interacts with NOTCH1, NOTCH2 AND NOTCH3.  
 CC -1- SUBCELLULAR LOCATION: Type I membrane protein.  
 CC -1- TISSUE SPECIFICITY: Widely expressed in many tissues, with highest  
 CC expression in brain, heart, muscle and thymus.  
 CC -1- DEVELOPMENTAL STAGE: At 8.75-9.75 dpc expression was detected  
 CC in structures that include those destined to contribute to the  
 CC cardiovascular system of the adult heart. Expression was also  
 CC detected in the mesencephalon and rhombencephalon.  
 CC -1- DOMAIN: The DSL domain is indispensable and sufficient for binding  
 CC to NOTCH2.  
 CC -1- SIMILARITY: Contains 15 EGF-like domains.  
 CC -1- SIMILARITY: Contains 1 DSL domain.  
 CC -----  
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration  
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -  
 CC the European Bioinformatics Institute. There are no restrictions on its  
 CC use by non-profit institutions as long as its content is in no way  
 CC modified and this statement is not removed. Usage by and for commercial  
 CC entities requires a license agreement (see <http://www.isb-sib.ch/announce/>  
 CC or send an email to [license@isb-sib.ch](mailto:license@isb-sib.ch)).  
 CC -----  
 CC EMBL; AF171092; AAF15505.1; -  
 DR HSSP; P00740; IEDM.  
 DR MGD; MGI:1095416; Jag1.  
 DR GO; GO:0005576; C:extracellular; ISS.  
 DR GO; GO:0005509; F:calcium ion binding activity; NAS.  
 DR GO; GO:0008083; F:growth factor activity; ISS.  
 DR GO; GO:0005112; F:Notch binding activity; IPI.  
 DR GO; GO:0005198; F:structural molecule activity; ISS.  
 DR GO; GO:0001525; P:angiogenesis; ISS.  
 DR GO; GO:0001709; P:cell fate determination; ISS.

DR GO; GO:0045446; P:endothelial cell differentiation; ISS.  
 DR GO; GO:0030097; P:hemopoiesis; ISS.  
 DR GO; GO:0030216; P:keratinocyte differentiation; ISS.  
 DR GO; GO:0002011; P:morphogenesis of an epithelial sheet; IMP.  
 DR GO; GO:0045445; P:myoblast differentiation; ISS.  
 DR GO; GO:0007219; P:Notch receptor signaling pathway; ISS.  
 DR GO; GO:0007399; P:neurogenesis; ISS.  
 DR GO; GO:0042127; P:regulation of cell proliferation; ISS.  
 DR InterPro: IPR000152; Asx\_hydroxyl.  
 DR InterPro: IPR001774; DSL.  
 DR InterPro: IPR000742; EGF\_2.  
 DR InterPro: IPR001881; EGF\_Ca.  
 DR InterPro: IPR001438; EGF\_II.  
 DR InterPro: IPR006209; EGF-like.  
 DR InterPro: IPR001007; VWF\_C.  
 DR Pfam: PF01414; DSL; 1.  
 DR Pfam: PF00008; EGF; 14.  
 DR PRINTS: PR00010; EGFBLD.  
 DR SMART; SM00051; DSL; 1.  
 DR SMART; SM00179; EGF\_CA; 10.  
 DR SMART; SM00214; VMC; 1.  
 DR PROSITE: PS00010; ASX\_HYDROXYL; 10.  
 DR PROSITE: PS00022; EGF\_1; 16.  
 DR PROSITE: PS01186; EGF\_2; 12.  
 DR PROSITE: PS01187; EGF\_CA; 8.  
 DR Calcium-binding; EGF-like domain; Glycoprotein; Developmental protein;  
 KW Repeat; Transmembrane; Signal.  
 FT SIGNAL 1 33 POTENTIAL.  
 FT CHAIN 34 1218 JAGGED 1.  
 FT DOMAIN 34 1218 EXTRACELLULAR (POTENTIAL).  
 FT TRANSMEM 1068 1093 POTENTIAL.  
 FT CYTOPLASMIC (POTENTIAL).  
 FT DOMAIN 1094 1218 DSL.  
 FT DOMAIN 167 229 EGF-Like 1 (ATYPICAL).  
 FT DOMAIN 230 266 EGF-Like 2.  
 FT DOMAIN 296 334 EGF-Like 3.  
 FT DOMAIN 336 372 EGF-Like 4.  
 FT DOMAIN 374 410 EGF-Like 5.  
 FT DOMAIN 412 448 EGF-Like 6.  
 FT DOMAIN 450 485 EGF-Like 7.  
 FT DOMAIN 487 523 EGF-Like 8.  
 FT DOMAIN 525 561 EGF-Like 9.  
 FT DOMAIN 574 627 EGF-Like 10.  
 FT DOMAIN 629 665 EGF-Like 11.  
 FT DOMAIN 667 703 EGF-Like 12.  
 FT DOMAIN 705 741 EGF-Like 13.  
 FT DOMAIN 744 780 EGF-Like 14.  
 FT DOMAIN 782 818 EGF-Like 15.  
 FT DOMAIN 820 856 CALCIUM-BINDING (POTENTIAL).  
 FT DISULFD 300 312 CALCIUM-BINDING (POTENTIAL).  
 FT DISULFD 306 322 CALCIUM-BINDING (POTENTIAL).  
 FT DISULFD 324 333 CALCIUM-BINDING (POTENTIAL).  
 FT DISULFD 340 351 CALCIUM-BINDING (POTENTIAL).  
 FT DISULFD 345 360 CALCIUM-BINDING (POTENTIAL).  
 FT DISULFD 362 371 BY SIMILARITY.  
 FT DISULFD 378 389 BY SIMILARITY.  
 FT DISULFD 383 398 BY SIMILARITY.  
 FT DISULFD 400 409 BY SIMILARITY.  
 FT DISULFD 416 427 BY SIMILARITY.  
 FT DISULFD 421 436 BY SIMILARITY.  
 FT DISULFD 438 447 BY SIMILARITY.  
 FT DISULFD 454 464 BY SIMILARITY.  
 FT DISULFD 464 473 BY SIMILARITY.  
 FT DISULFD 475 484 BY SIMILARITY.  
 FT DISULFD 491 502 BY SIMILARITY.  
 FT DISULFD 496 511 BY SIMILARITY.  
 FT DISULFD 513 522 BY SIMILARITY.  
 FT DISULFD 529 540 BY SIMILARITY.  
 FT DISULFD 540 549 BY SIMILARITY.  
 FT DISULFD 551 560 BY SIMILARITY.  
 FT DISULFD 578 605 BY SIMILARITY.  
 FT DISULFD 599 615 BY SIMILARITY.  
 FT DISULFD 617 626 BY SIMILARITY.  
 FT DISULFD 633 644 BY SIMILARITY.

```
FT DISULFID 638 653 BY SIMILARITY.
FT DISULFID 655 664 BY SIMILARITY.
FT DISULFID 671 682 BY SIMILARITY.
FT DISULFID 676 691 BY SIMILARITY.
FT DISULFID 693 702 BY SIMILARITY.
FT DISULFID 709 720 BY SIMILARITY.
FT DISULFID 714 729 BY SIMILARITY.
FT DISULFID 731 740 BY SIMILARITY.
FT DISULFID 748 759 BY SIMILARITY.
FT DISULFID 753 768 BY SIMILARITY.
FT DISULFID 770 779 BY SIMILARITY.
FT DISULFID 786 797 BY SIMILARITY.
FT DISULFID 791 806 BY SIMILARITY.
FT DISULFID 808 817 BY SIMILARITY.
FT DISULFID 824 835 BY SIMILARITY.
FT DISULFID 829 844 BY SIMILARITY.
FT DISULFID 846 855 BY SIMILARITY.
FT CARBOHYD 143 143 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 217 217 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 382 382 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 559 559 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 745 745 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 960 960 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 991 991 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 1045 1045 N-LINKED (GLCNAC. . .) (POTENTIAL).
FT CARBOHYD 1064 1064 N-LINKED (GLCNAC. . .) (POTENTIAL).
SQ SEQUENCE 1218 AA; 134163 MW; 77739F8928BB793C CRC64;
```

```
Query Match 36.4%; Score 47; DB 1; Length 1218;
Best Local Similarity 37.5%; Pred. No. 37;
Matches 9; Conservative 3; Mismatches 10; Indels 2; Gaps 1;
```

```
Oy 1 CSCKN--TDSRCKAROLELNERTC 22
Db 691 CDCKNGWKGTCHSRDSQCDEATC 714
```

Search completed: September 12, 2003, 10:35:14  
Job time : 24 secs

**THIS PAGE BLANK (USPTO)**

GenCore version 5.1.6  
Copyright (c) 1993 - 2003 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 12, 2003, 10:30:41; Search time 96 Seconds

(without alignments)  
61.825 Million cell updates/sec

Title: US-09-579-420b-1\_COPY\_22\_44  
Perfect score: 129  
Sequence: 1 CSCKNTDSRCKARQLELNERTCR 23

Scoring table:  
BLOSUM62  
Gapop 10.0, Gapext 0.5

Searched: 830525 seqs, 258052604 residues

Total number of hits satisfying chosen parameters: 830525

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%  
Listing first 45 summaries

Database :

SPTREMBL\_23:\*  
1: sp.archaea:\*  
2: sp.bacteria:\*  
3: sp.fungi:\*  
4: sp.human:\*  
5: sp.invertebrate:\*  
6: sp.mammal:\*  
7: sp.mbc:\*  
8: sp.organelle:\*  
9: sp.phage:\*  
10: sp.plant:\*  
11: sp rodent:\*  
12: sp.virus:\*  
13: sp.vertebrate:\*  
14: sp.unclassified:\*  
15: sp.virus:\*  
16: sp.dactariap:\*  
17: sp.archaeap:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	129	100.0	64	6 Q8MT19	Q8MT19 ovis aries
2	129	100.0	102	6 Q9XT61	Q9XT61 macaca fasc
3	129	100.0	102	11 Q63672	Q63672 rattus norv
4	129	100.0	109	6 Q8MIN1	Q8MIN1 capra hircu
5	129	100.0	110	11 Q88911	Q88911 rattus norv
6	129	100.0	113	6 Q8MT20	Q8MT20 ovis aries
7	129	100.0	123	6 Q9N1S1	Q9N1S1 capreolus c
8	129	100.0	131	6 Q8MJ86	Q8MJ86 capreolus c
9	129	100.0	142	11 Q9ERL6	Q9ERL6 mesocricetu
10	129	100.0	184	6 Q8HY70	Q8HY70 mustela vis
11	129	100.0	189	6 Q9S1Q4	Q9S1Q4 felis silve
12	129	100.0	190	6 Q77643	Q77643 ovis aries
13	129	100.0	190	11 Q91ZE1	Q91ZE1 rattus norv
14	129	100.0	190	11 Q9QX39	Q9QX39 spalax leuc
15	129	100.0	191	4 Q96KJ0	Q96KJ0 homo sapien
16	129	100.0	191	4 Q96L82	Q96L82 homo sapien

17	129	100.0	191	6 Q95NE5	Q95NE5 macaca fasc
18	125	96.9	194	13 Q42572	Q42572 xenopus lae
19	102	79.1	188	13 Q73682	Q73682 brachydanio
20	85	65.9	65	11 Q91Y68	Q91Y68 rattus norv
21	85	65.9	89	11 Q91Y66	Q91Y66 rattus norv
22	54	41.9	315	13 Q9M6E0	Q9M6E0 brachydanio
23	54	41.9	1187	2 Q49549	Q49549 mycoplasma
24	53	41.1	129	10 Q818U0	Q818U0 arabidopsis
25	53	41.1	129	10 P82773	P82773 arabidopsis
26	53	41.1	161	10 Q9SZW0	Q9SZW0 arabidopsis
27	53	41.1	188	4 Q8TEV2	Q8TEV2 homo sapien
28	53	41.1	1029	5 Q95XH6	Q95XH6 caenorhabdi
29	50	38.8	120	10 P82771	P82771 arabidopsis
30	49	38.0	189	3 Q01690	Q01690 pneumocysti
31	49	38.0	1051	3 Q01694	Q01694 pneumocysti
32	48	37.2	576	12 Q86903	Q86903 la piedad-m
33	48	37.2	793	12 Q8JYA2	Q8JYA2 aedes albop
34	47	36.4	234	5 Q21963	Q21963 caenorhabdi
35	47	36.4	552	10 Q9LFR1	Q9LFR1 arabidopsis
36	47	36.4	590	10 Q9FHE1	Q9FHE1 arabidopsis
37	47	36.4	880	4 Q8NAU9	Q8NAU9 homo sapien
38	47	36.4	993	4 Q81X30	Q81X30 homo sapien
39	47	36.4	1193	13 Q90819	Q90819 gallus gall
40	47	36.4	1214	13 Q90YD2	Q90YD2 xenopus lae
41	46.5	36.0	299	16 Q8ZOM5	Q8ZOM5 salmonella
42	46.5	36.0	299	16 Q8Z867	Q8Z867 salmonella
43	46	35.7	323	5 Q9Y5D3	Q9Y5D3 drosophila
44	46	35.7	1245	13 Q9YGH8	Q9YGH8 scophthalmu
45	46	35.7	1369	13 Q8UW86	Q8UW86 paratichthy

## ALIGNMENTS

RESULT 1	Q8MT19	PRELIMINARY:	PRT:	64 AA.
ID	Q8MT19			
AC	Q8MT19:			
DT	01-OCT-2002 (TREMBLrel. 22, Created)			
DT	01-OCT-2002 (TREMBLrel. 22, Last sequence update)			
DT	01-OCT-2002 (TREMBLrel. 22, Last annotation update)			
DE	Vascular endothelial growth factor 188 isoform (Fragment).			
OS	ovis aries (Sheep).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;			
OC	Bovidae; Caprinae; Ovis.			
OX	NCBI_TaxID=9940;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RC	TISSUE=Placental artery endothelium;			
RA	Chung J.-Y., Tsol S.C.W., Wen Y.-X., Magness R.R., Zheng J.;			
RT	"Expression of VEGF receptors in ovine placental artery endothelial			
RT	cells."			
RL	Submitted (AUG-2002) to the EMBL/Genbank/DBJ databases.			
DR	EMBL: AF534638; AAN04109.1;			
FT	NON-TER			
FT	SEQUENCE 64 AA; 7674 MW; 8BF719596DDEF6B6 CNC64;			
QY	Query Match	100.0%;	Score 129;	DB 6;
DB	Best Local Similarity	100.0%;	Pred. No. 1.8e-13;	Length 64;
	Matches 23; Conservative	0;	Mismatches 0;	Indels 0;
				Gaps 0;
QY	1 CSCKNTDSRCKARQLELNERTCR 23			
DB				
	36 CSCKNTDSRCKARQLELNERTCR 58			
RESULT 2	Q9XT61	PRELIMINARY:	PRT:	102 AA.
ID	Q9XT61:			
AC	Q9XT61:			
DT	01-NOV-1999 (TREMBLrel. 12, Created)			
DT	01-NOV-1999 (TREMBLrel. 12, Last sequence update)			

```
DT 01-MAR-2003 (TREMBlrel. 23, last annotation update)
DE Vascular endothelial growth factor (Fragment).
GN VEGF.
OS Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecinae; Macaca.
OX NCBI_TaxID=9541;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Lung;
RA Kim I.K., Ryan A.M., Rohan R., Amano S., Aguilar S., Miller J.W.,
RA Adams A.P.;
RT "Constitutive expression of VEGF, VEGFR-1 and VEGFR-2 in normal
RT eyes."
RL Submitted (NOV-1998) to the EMBL/GenBank/DBJ databases.
DR EMBL: AF106942; AAD20589.1; -.
DR InterPro: IPR000072; PD_growth_factor.
DR Pfam: PF00341; PDGF; 1.
FT NON_TER 1
SQ SEQUENCE 102 AA; 12065 MW; 5F2D1A765DC29E02 CRC64;

Query Match 100.0%; Score 129; DB 6; Length 102;
Best Local Similarity 100.0%; Pred. No. 2.8e-13;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCNTDSRCAROLEINERTCR 23
DB 74 CSCNTDSRCAROLEINERTCR 96
|||||

RESULT 3
OY 063672 PRELIMINARY; PRT; 102 AA.
AC 063672: 063882;
DT 01-NOV-1996 (TREMBlrel. 01, Created)
DT 01-NOV-1998 (TREMBlrel. 08, last sequence update)
DT 01-MAR-2003 (TREMBlrel. 23, last annotation update)
DE Vascular endothelial growth factor (VEGF188) (Fragment).
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=CD; TISSUE=Lung;
RA Kim I., Ryan A., Rohan R., Aguilar S., Amano S., Brown L.F.,
RA Miller J., Adams A.P.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF 29-52 FROM N.A.
RC STRAIN=SPRAGUE-DAWLEY; TISSUE=Brain;
RA Yakovlev A.G., Paden A.I.;
RL Submitted (JUL-1993) to the EMBL/GenBank/DBJ databases.
RN [3]
RP SEQUENCE OF 29-52 FROM N.A.
RC TISSUE=Brain;
RX MEDLINE=93343939; PubMed=8343163;
RA Ladoux A., Frelin C.;
RT "Expression of vascular endothelial growth factor by cultured
RT endothelial cells from brain microvessels."
RL Biochem. Biophys. Res. Commun. 194:799-803(1993).
DR EMBL: AF062644; AAC16448.1; -.
DR EMBL: L20913; AAA42334.1; -.
DR EMBL: S64321; AAB27671.1; -.
DR InterPro: IPR000072; PD_growth_factor.
DR Pfam: PF00341; PDGF; 1.
FT NON_TER 1
SQ SEQUENCE 102 AA; 12163 MW; CDFC6A6914D07D2B CRC64;

Query Match 100.0%; Score 129; DB 11; Length 102;
Best Local Similarity 100.0%; Pred. No. 2.8e-13;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
OY 1 CSCNTDSRCAROLEINERTCR 23
DB 74 CSCNTDSRCAROLEINERTCR 96
|||||

RESULT 4
OY 088911 PRELIMINARY; PRT; 109 AA.
AC 088911:
DT 01-OCT-2002 (TREMBlrel. 22, Created)
DT 01-OCT-2002 (TREMBlrel. 22, last sequence update)
DT 01-MAR-2003 (TREMBlrel. 23, last annotation update)
DE Vascular endothelial growth factor 165 (Fragment).
OS Capra hircus (Goat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Capra.
OX NCBI_TaxID=9925;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Corpus luteum;
RA Kawate N., Tsuji M., Tamada H., Inaba T., Sawada T.;
RT "Changes of Messenger RNAs Encoding Vascular Endothelial Growth Factor
RT and Its Receptors during the Development and Maintenance of Caprine
RT Corpora lutea."
RL Submitted (MAY-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL: AY114352; AAM76673.1; -.
DR InterPro: IPR000072; PD_growth_factor.
DR Pfam: PF00341; PDGF; 1.
DR ProDom: PD001629; PD_growth_factor; 1.
DR SMART: SM00141; PDGF; 1.
DR PROSITE: PS50278; PDGF_2; 1.
FT NON_TER 1
SQ SEQUENCE 109 AA; 12656 MW; 912657251A37E023 CRC64;

Query Match 100.0%; Score 129; DB 6; Length 109;
Best Local Similarity 100.0%; Pred. No. 3e-13;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCNTDSRCAROLEINERTCR 23
DB 81 CSCNTDSRCAROLEINERTCR 103
|||||

RESULT 5
OY 088911 PRELIMINARY; PRT; 110 AA.
AC 088911:
DT 01-NOV-1998 (TREMBlrel. 08, Created)
DT 01-NOV-1998 (TREMBlrel. 08, last sequence update)
DT 01-MAR-2003 (TREMBlrel. 23, last annotation update)
DE Vascular endothelial growth factor A 110 (Fragment).
GN VEGF.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=Sprague-Dawley; TISSUE=Penis;
RX MEDLINE=99115228; PubMed=9916007;
RA Burchardt M., Burchardt T., Chen M.W., Shabsigh A., de la Taille A.,
RA Buttayan R., Shabsigh R.;
RT "Expression of messenger ribonucleic acid splice variants for vascular
RT endothelial growth factor in the penis of adult rats and humans."
RL Biol. Reprod. 60:398-404(1999).
DR EMBL: AF080594; AAC36708.1; -.
DR HSSP: P49763; IFEV.
DR InterPro: IPR002400; GF_cysknot.
DR InterPro: IPR000072; PD_growth_factor.
DR Pfam: PF00341; PDGF; 1.
DR PRINTS: PR00438; GFCYSKNOT.
```

DR Prodom; PD001629; PD\_growth\_factor; 1.  
 DR SMART; SM00141; PDGF\_1;  
 DR PROSITE; PS00249; PDGF\_1; 1.  
 DR PROSITE; PS50278; PDGF\_2; 1.  
 FT NON\_TER 1  
 SQ SEQUENCE 110 AA; 12713 MW; B81B79AC08D9F06 CRC64;

Query Match 100.0%; Score 129; DB 11; Length 110;  
 Best Local Similarity 100.0%; Pred. No. 3e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERTCR 23  
 ID 82 CCKNTDSRCKAROLELNERTCR 104  
 DB

RESULT 6  
 Q8MI20 PRELIMINARY; PRT; 113 AA.  
 ID 08MI20;  
 AC 08MI20;  
 DT 01-OCT-2002 (TREMBLrel. 22, Created)  
 DT 01-OCT-2002 (TREMBLrel. 22, Last sequence update)  
 DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
 DE Vascular endothelial growth factor 182 isoform (Fragment).  
 OS Ovis aries (Sheep).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;  
 OC Bovidae; Caprinae; Ovis.  
 OX NCBI\_TaxID=9940;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Placental artery endothelium;  
 RA Chung J.-Y., Tsai S.C.M., Wen Y.-X., Magness R.R., Zheng J.;  
 RT "Expression of VEGF receptors in ovine placental artery endothelial  
 cells";  
 RL Submitted (AUG-2002) to the EMBL/Genbank/DBJ databases.  
 DR EMBL; AF534637; AAN04108.1; -  
 DR InterPro; IPR000072; PD\_growth\_factor.  
 DR Pfam; PF00341; PDGF\_1.  
 DR Prodom; PD001629; PD\_growth\_factor; 1.  
 DR PROSITE; PS50278; PDGF\_2; 1.  
 FT NON\_TER 1  
 FT NON\_TER 113  
 SQ SEQUENCE 113 AA; 13355 MW; 2BF11C84E4F4858E CRC64;

Query Match 100.0%; Score 129; DB 6; Length 113;  
 Best Local Similarity 100.0%; Pred. No. 3.1e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERTCR 23  
 ID 86 CCKNTDSRCKAROLELNERTCR 108  
 DB

RESULT 7  
 Q9N1S1 PRELIMINARY; PRT; 123 AA.  
 ID 09N1S1;  
 AC 09N1S1;  
 DT 01-OCT-2000 (TREMBLrel. 15, Created)  
 DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)  
 DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
 DE Vascular endothelial growth factor isoform 165 (Fragment).  
 CN VEGF.  
 OS Capreolus capreolus (Roe deer).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;  
 OC Cervidae; Odocoileinae; Capreolus.  
 OX NCBI\_TaxID=9658;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Testis;  
 RA MEDLINE=20532861; PubMed=11078967;  
 RA Wagener A., Blotner S., Goritz F., Fickel J.;

RT "Detection of growth factors in the testis of roe deer (Capreolus  
 capreolus)";  
 RT Anim. Reprod. Sci. 64:65-75(2000).  
 RL EMBL; AF152594; AAF73233.1; -  
 DR HSSP; P49763; 1FZV.  
 DR InterPro; IPR000072; PD\_growth\_factor.  
 DR Pfam; PF00341; PDGF\_1.  
 DR Prodom; PD001629; PD\_growth\_factor; 1.  
 DR SMART; SM00141; PDGF\_1;  
 DR PROSITE; PS00249; PDGF\_1; 1.  
 DR PROSITE; PS50278; PDGF\_2; 1.  
 FT NON\_TER 1  
 FT NON\_TER 123  
 SQ SEQUENCE 123 AA; 14354 MW; 0A756F54105AACE1 CRC64;

Query Match 100.0%; Score 129; DB 6; Length 123;  
 Best Local Similarity 100.0%; Pred. No. 3.3e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERTCR 23  
 ID 101 CCKNTDSRCKAROLELNERTCR 123  
 DB

RESULT 8  
 Q8MJ86 PRELIMINARY; PRT; 131 AA.  
 ID 08MJ86;  
 AC 08MJ86;  
 DT 01-OCT-2002 (TREMBLrel. 22, Created)  
 DT 01-OCT-2002 (TREMBLrel. 22, Last sequence update)  
 DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
 DE Vascular endothelial growth factor-3 (Fragment).  
 OS Capreolus capreolus (Roe deer).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;  
 OC Cervidae; Odocoileinae; Capreolus.  
 OX NCBI\_TaxID=9658;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Testis;  
 RA Wagener A., Fickel J.;  
 RT "Detection of VEGF in roe deer testis";  
 RL Submitted (MAY-2002) to the EMBL/Genbank/DBJ databases.  
 DR EMBL; AF514284; AAM49789.1; -  
 DR InterPro; IPR000072; PD\_growth\_factor.  
 DR Pfam; PF00341; PDGF\_1.  
 DR Prodom; PD001629; PD\_growth\_factor; 1.  
 DR SMART; SM00141; PDGF\_1.  
 DR PROSITE; PS50278; PDGF\_2; 1.  
 FT NON\_TER 1  
 FT NON\_TER 131  
 SQ SEQUENCE 131 AA; 15358 MW; 99719A58EAC7FCA CRC64;

Query Match 100.0%; Score 129; DB 6; Length 131;  
 Best Local Similarity 100.0%; Pred. No. 3.5e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERTCR 23  
 ID 103 CCKNTDSRCKAROLELNERTCR 125  
 DB

RESULT 9  
 Q9ERL6 PRELIMINARY; PRT; 142 AA.  
 ID 09ERL6;  
 AC 09ERL6;  
 DT 01-MAR-2001 (TREMBLrel. 16, Created)  
 DT 01-MAR-2001 (TREMBLrel. 16, Last sequence update)  
 DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
 DE Vascular endothelial growth factor VEGF (Fragment).  
 OS Mesocricetus auratus (Golden hamster).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;

OC Mesocricetus.  
OX NCBI\_TaxID=10036;  
RN [1]  
RP SEQUENCE FROM N.A.  
RA Ramesh G., Kondalath P., Seshagiri P.B.;  
RT "Regulation of expression of transforming growth factor-beta's by  
RT steroid hormone in the hamster uterus."  
RL Submitted (AUG-2000) to the EMBL/Genbank/DBJ databases.  
DR EMBL: AF297627; AAG16241.1; -  
DR HSSP: P49763; 1F3V  
DR InterPro: IPR000072; PD\_growth\_factor.  
DR Pfam: PF00341; PDGF\_1.  
DR ProDom: PD001629; PD\_growth\_factor; 1.  
DR SMART: SM00141; PDGF\_1.  
DR PROSITE: PS00249; PDGF\_1; 1.  
DR PROSITE: PS50278; PDGF\_2; 1.  
FT NON\_TER  
FT 1  
FT 142  
SQ SEQUENCE 142 AA; 16621 MW; F7DA16D924E4E59E CRC64;

Query Match 100.0%; Score 129; DB 11; Length 142;  
Best Local Similarity 100.0%; Pred. No. 3.8e-13;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CCKNTDSRCKAROLEINERTCR 23  
DB 118 CCKNTDSRCKAROLEINERTCR 140

RESULT 10

08HY70 PRELIMINARY; PRT; 184 AA.

AC 08HY70;  
DT 01-MAR-2003 (TREMBLrel. 23, Created)  
DT 01-MAR-2003 (TREMBLrel. 23, Last sequence update)  
DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
DE Vascular endothelial growth factor A (Fragment).  
OS Mustela vison (American mink).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Carnivora; Fissipedia; Mustelidae; Mustelinae;  
OC Mustela.  
OX NCBI\_TaxID=9667;  
RN [1]  
RP SEQUENCE FROM N.A.  
RA Lopes F.L., Demarais J.A., Gevery N.Y., Ledoux S., Murphy B.D.;  
RT "Expression of VEGF isoforms and receptors during implantation in  
RT Mustela vison."  
RL Submitted (OCT-2002) to the EMBL/Genbank/DBJ databases.  
DR EMBL: AY158156; AAN76365.1; -  
FT NON\_TER  
FT 184  
FT 184  
SQ SEQUENCE 184 AA; 21608 MW; BAD47CCB0C146F22 CRC64;

Query Match 100.0%; Score 129; DB 6; Length 184;  
Best Local Similarity 100.0%; Pred. No. 4.8e-13;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CCKNTDSRCKAROLEINERTCR 23  
DB 162 CCKNTDSRCKAROLEINERTCR 184

RESULT 11  
0951Q4 PRELIMINARY; PRT; 189 AA.

AC 0951Q4;  
DT 01-DEC-2001 (TREMBLrel. 19, Created)  
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)  
DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
DE Vascular endothelial growth factor.  
OS Felis silvestris catus (Cat).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Carnivora; Fissipedia; Felidae; Felis.  
OX NCBI\_TaxID=9685;

RN [1]  
RP SEQUENCE FROM N.A.  
RA Koga I., Kobayashi Y., Yazawa M., Masuda K., Ohno K., Tsujimoto H.;  
RT "Nucleotide sequence and expression of the feline vascular endothelial  
RT growth factor."  
RL Submitted (SEP-2001) to the EMBL/Genbank/DBJ databases.  
DR EMBL: AB071947; BAB68520.1; -  
DR InterPro: IPR000072; PD\_growth\_factor.  
DR Pfam: PF00341; PDGF\_1.  
DR ProDom: PD001629; PD\_growth\_factor; 1.  
DR SMART: SM00141; PDGF\_1.  
DR PROSITE: PS00249; PDGF\_1; 1.  
DR PROSITE: PS50278; PDGF\_2; 1.  
SQ SEQUENCE 189 AA; 22193 MW; C1E4646759AB3FD6 CRC64;

Query Match 100.0%; Score 129; DB 6; Length 189;  
Best Local Similarity 100.0%; Pred. No. 5e-13;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CCKNTDSRCKAROLEINERTCR 23  
DB 161 CCKNTDSRCKAROLEINERTCR 183

RESULT 12  
077643 PRELIMINARY; PRT; 190 AA.

AC 077643;

DT 01-NOV-1998 (TREMBLrel. 08, Created)  
DT 01-NOV-1998 (TREMBLrel. 08, Last sequence update)  
DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
DE Vascular endothelial growth factor.  
GN VEGF.

OS Ovis aries (Sheep).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;  
OC Bovidae; Caprinae; Ovis.  
OX NCBI\_TaxID=9940;  
RN [1]  
RP SEQUENCE FROM N.A.

RC STRAIN=Columbia-Rambouillet;  
RA Cheung C.Y., Brace R.A.;  
RT "Ovine vascular endothelial growth factor: Nucleotide sequence and  
RT expression in fetal tissues."  
RL Growth Factors 0:0-0(1998).  
DR EMBL: AF071015; AAC23608.1; -  
DR HSSP: P49763; 1F3V.  
DR InterPro: IPR000072; PD\_growth\_factor.  
DR Pfam: PF00341; PDGF\_1.  
DR ProDom: PD001629; PD\_growth\_factor; 1.  
DR SMART: SM00141; PDGF\_1.  
DR PROSITE: PS00249; PDGF\_1; 1.  
DR PROSITE: PS50278; PDGF\_2; 1.  
SQ SEQUENCE 190 AA; 22342 MW; OD5E3B3E5C5E739 CRC64;

Query Match 100.0%; Score 129; DB 6; Length 190;  
Best Local Similarity 100.0%; Pred. No. 5e-13;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CCKNTDSRCKAROLEINERTCR 23  
DB 162 CCKNTDSRCKAROLEINERTCR 184

RESULT 13

091ZE1 PRELIMINARY; PRT; 190 AA.

AC 091ZE1;  
DT 01-DEC-2001 (TREMBLrel. 19, Created)  
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)  
DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
DE Vascular endothelial growth factor.  
GN VEGF.



OS Rattus norvegicus (Rat).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.  
 OX NCBI\_TaxID=10116;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC STRAIN=Sprague-Dawley;  
 RC Marion S., Lee T.-C.;  
 RT "Cloning of multiple VEGF splice variants from hypoxic neonatal rat  
 RT cardiomyocytes";  
 RL Submitted (Apr-2001) to the EMBL/GenBank/DBJ databases.  
 DR EMBL; AF033506; AAL07526.1; -  
 DR InterPro: IPR000072; PD\_growth\_factor.  
 DR Pfam: PF00341; PDGF\_1.  
 DR ProDom: PD001629; PD\_growth\_factor; 1.  
 DR SMART: SM00141; PDGF\_1.  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS50278; PDGF\_2; 1.  
 SQ SEQUENCE 190 AA; 22396 MW; 589374010441F377 CRC64;

Query Match 100.0%; Score 129; DB 11; Length 190;  
 Best Local Similarity 100.0%; Pred. No. 5e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCAROLELNERTCR 23  
 ID 090X39 PRELIMINARY; PRT; 190 AA.  
 AC 090X39;  
 DT 01-MAY-2000 (TREMBLrel. 13, Created)  
 DT 01-MAY-2000 (TREMBLrel. 13, Last sequence update)  
 DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
 DE Vascular endothelial growth factor.  
 GN VEGF.  
 OS Spalax leucodon ehrenbergi (Ehrenberg's mole rat).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Spalacinae;  
 OC Nanospalax.  
 OX NCBI\_TaxID=30637;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA MEDLINE=99313148; PubMed=10386577;  
 RA Avivi A., Resnick M.B., Nevo E., Joel A., Levy A.P.;  
 RT "Adaptive hypoxic tolerance in the subterranean mole rat Spalax  
 RT ehrenbergi: the role of vascular endothelial growth factor";  
 RL FEBS Lett. 452:133-140(1999).  
 DR EMBL; AF186236; AAD56245.1; -  
 DR HSPF; P49763; IFZY.  
 DR InterPro: IPR000072; PD\_growth\_factor.  
 DR Pfam: PF00341; PDGF\_1.  
 DR ProDom: PD001629; PD\_growth\_factor; 1.  
 DR SMART: SM00141; PDGF\_1.  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS50278; PDGF\_2; 1.  
 SQ SEQUENCE 190 AA; 22488 MW; 2228383BC65F0BFE CRC64;

Query Match 100.0%; Score 129; DB 11; Length 190;  
 Best Local Similarity 100.0%; Pred. No. 5e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCAROLELNERTCR 23  
 ID 162 CSCKNTDSRCAROLELNERTCR 184

RESULT 15  
 O96KJ0 PRELIMINARY; PRT; 191 AA.  
 ID O96KJ0  
 AC O96KJ0;

DT 01-DEC-2001 (TREMBLrel. 19, Created)  
 DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)  
 DT 01-MAR-2003 (TREMBLrel. 23, Last annotation update)  
 DE Vascular endothelial growth factor 163b.  
 OS Homo sapiens (Human).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.  
 OX NCBI\_TaxID=9606;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=Kidney;  
 RA Sugiono M., Winkler M., Gillatt D., Harper S.J., Bates D.O.;  
 RT "A new isoform of vascular endothelial growth factor mRNA is down-  
 RT regulated in renal tumors";  
 RL (In) Unknown A. (eds.);  
 RL Proceedings of the 7th World Congress on Microcirculation, pp.3-3,  
 RL Sydney, Australia (2001).  
 DR EMBL; AF430806; AAL27435.1; -  
 DR InterPro: IPR000072; PD\_growth\_factor.  
 DR Pfam: PF00341; PDGF\_1.  
 DR ProDom: PD001629; PD\_growth\_factor; 1.  
 DR SMART: SM00141; PDGF\_1.  
 DR PROSITE: PS00249; PDGF\_1; 1.  
 DR PROSITE: PS50278; PDGF\_2; 1.  
 SQ SEQUENCE 191 AA; 22258 MW; D25243E540AC79BD CRC64;

Query Match 100.0%; Score 129; DB 4; Length 191;  
 Best Local Similarity 100.0%; Pred. No. 5e-13;  
 Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 CSCKNTDSRCAROLELNERTCR 23  
 ID 163 CSCKNTDSRCAROLELNERTCR 185

Search completed: September 12, 2003, 10:34:45  
 Job time : 99 secs

**THIS PAGE BLANK (USPTO)**

GenCore version 5.1.6  
Copyright (c) 1993 - 2003 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: September 12, 2003, 10:34:50 ; Search time 320 Seconds  
(without alignments)  
10.487 Million cell updates/sec

Title: US-09-579-420B-1\_COPY\_22\_44

Perfect score: 129

Sequence: 1 CSCKNTDSRCKAROLELNERCTR 23

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 541936 segs, 145912426 residues

Total number of hits satisfying chosen parameters: 541936

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Listing first 45 summaries

Database :

Published Applications AA:\*

- 1: /cgn2\_6/ptodata/2/pubpaa/US07\_PUBCOMB.pep:\*
- 2: /cgn2\_6/ptodata/2/pubpaa/PCT\_NEW\_PUB.pep:\*
- 3: /cgn2\_6/ptodata/2/pubpaa/US06\_NEW\_PUB.pep:\*
- 4: /cgn2\_6/ptodata/2/pubpaa/US06\_PUBCOMB.pep:\*
- 5: /cgn2\_6/ptodata/2/pubpaa/US07\_NEW\_PUB.pep:\*
- 6: /cgn2\_6/ptodata/2/pubpaa/PCTUS\_PUBCOMB.pep:\*
- 7: /cgn2\_6/ptodata/2/pubpaa/US08\_NEW\_PUB.pep:\*
- 8: /cgn2\_6/ptodata/2/pubpaa/US08\_PUBCOMB.pep:\*
- 9: /cgn2\_6/ptodata/2/pubpaa/US09A\_PUBCOMB.pep:\*
- 10: /cgn2\_6/ptodata/2/pubpaa/US09B\_PUBCOMB.pep:\*
- 11: /cgn2\_6/ptodata/2/pubpaa/US09C\_PUBCOMB.pep:\*
- 12: /cgn2\_6/ptodata/2/pubpaa/US09\_NEW\_PUB.pep:\*
- 13: /cgn2\_6/ptodata/2/pubpaa/US10A\_PUBCOMB.pep:\*
- 14: /cgn2\_6/ptodata/2/pubpaa/US10B\_PUBCOMB.pep:\*
- 15: /cgn2\_6/ptodata/2/pubpaa/US10C\_PUBCOMB.pep:\*
- 16: /cgn2\_6/ptodata/2/pubpaa/US10\_NEW\_PUB.pep:\*
- 17: /cgn2\_6/ptodata/2/pubpaa/US60\_NEW\_PUB.pep:\*
- 18: /cgn2\_6/ptodata/2/pubpaa/US60\_PUBCOMB.pep:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	129	100.0	44	11	US-09-832-355A-3
2	129	100.0	44	14	US-10-104-440-11
3	129	100.0	44	15	US-10-104-610-15
4	129	100.0	165	15	US-10-200-050-3
5	129	100.0	190	10	US-08-813-398-8
6	129	100.0	190	15	US-10-071-370A-2
7	129	100.0	190	15	US-10-177-485-4
8	129	100.0	190	15	US-10-155-492-4
9	129	100.0	191	9	US-09-349-954A-2
10	129	100.0	191	10	US-09-932-451A-2
11	129	100.0	191	10	US-09-907-007-2
12	129	100.0	191	10	US-09-795-006A-2
13	129	100.0	191	10	US-09-870-759-122
14	129	100.0	191	12	US-09-751-708A-122
15	129	100.0	191	14	US-10-083-817-3

16	129	100.0	191	15	US-10-200-050-2	Sequence 2, Appl
17	129	100.0	191	15	US-10-201-386-56	Sequence 56, Appl
18	129	100.0	191	15	US-10-268-447-6	Sequence 6, Appl
19	129	100.0	191	15	US-10-262-538-20	Sequence 20, Appl
20	129	100.0	191	15	US-10-277-184-2	Sequence 2, Appl
21	129	100.0	191	15	US-10-207-655-51	Sequence 51, Appl
22	129	100.0	192	10	US-09-852-209A-8	Sequence 8, Appl
23	129	100.0	192	15	US-10-131-600-8	Sequence 8, Appl
24	129	100.0	208	12	US-10-293-157-26	Sequence 26, Appl
25	129	100.0	213	15	US-10-268-447-8	Sequence 8, Appl
26	129	100.0	214	9	US-09-349-954A-22	Sequence 22, Appl
27	129	100.0	214	10	US-09-907-007-22	Sequence 22, Appl
28	129	100.0	214	11	US-09-963-156A-1	Sequence 1, Appl
29	129	100.0	215	9	US-09-244-694-3	Sequence 3, Appl
30	129	100.0	232	10	US-09-795-006A-147	Sequence 147, App
31	129	100.0	232	11	US-09-935-726-7	Sequence 7, Appl
32	129	100.0	232	15	US-10-084-488-7	Sequence 7, Appl
33	129	100.0	232	15	US-10-268-447-10	Sequence 10, Appl
34	124	96.1	43	12	US-10-293-157-20	Sequence 20, Appl
35	123	95.3	232	14	US-10-127-551-5	Sequence 5, Appl
36	123	95.3	232	14	US-10-060-523-9	Sequence 9, Appl
37	122	94.6	191	15	US-10-207-655-53	Sequence 53, Appl
38	58.5	45.3	188	9	US-09-349-954A-6	Sequence 6, Appl
39	58.5	45.3	188	9	US-09-349-954A-19	Sequence 19, Appl
40	58.5	45.3	188	9	US-09-912-436-2	Sequence 2, Appl
41	58.5	45.3	188	10	US-09-907-007-6	Sequence 6, Appl
42	58.5	45.3	188	10	US-09-907-007-19	Sequence 19, Appl
43	58.5	45.3	188	10	US-09-795-006A-117	Sequence 117, App
44	58.5	45.3	188	10	US-09-852-209A-10	Sequence 10, Appl
45	58.5	45.3	188	15	US-10-131-600-10	Sequence 10, Appl

## ALIGNMENTS

RESULT 1  
US-09-832-355A-3  
; Sequence 3, Application US/09832355A  
; Publication No. US20030027751A1  
; GENERAL INFORMATION:  
; APPLICANT: Kessler, Imre  
; APPLICANT: Kessler, Paul  
; TITLE OF INVENTION: VEGF FUSION PROTEINS  
; FILE REFERENCE: 205654  
; CURRENT APPLICATION NUMBER: US/09/832,355A  
; CURRENT FILING DATE: 2001-04-10  
; NUMBER OF SEQ ID NOS: 126  
; SOFTWARE: PatentIn version 3.0  
; SEQ ID NO 3  
; LENGTH: 44  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-832-355A-3

Query Match 100.0%; Score 129; DB 11;  
Best Local Similarity 100.0%; Pred No. 7.4e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKAROLELNERCTR 23  
|||||  
DB 22 CSCKNTDSRCKAROLELNERCTR 44

RESULT 2  
US-10-104-440-11  
; Sequence 11, Application US/10104440  
; Publication No. US20020132774A1  
; GENERAL INFORMATION:  
; APPLICANT: KLAGSBRUN, Michael  
; APPLICANT: SOKER, Shay  
; APPLICANT: MIAO, Hua Quan  
; TITLE OF INVENTION: ANTAGONISTS OF NEUROFILIN RECEPTOR FUNCTION AND USE  
; TITLE OF INVENTION: THEREOF

FILE REFERENCE: 48802 C  
CURRENT APPLICATION NUMBER: US/10/104,440  
CURRENT FILING DATE: 2002-03-22  
PRIOR APPLICATION NUMBER: 09/580,803  
PRIOR FILING DATE: 2000-05-30  
PRIOR APPLICATION NUMBER: 60/069,155  
PRIOR FILING DATE: 1997-12-09  
PRIOR APPLICATION NUMBER: 60/069,687  
PRIOR FILING DATE: 1997-12-29  
PRIOR APPLICATION NUMBER: 60/078,541  
PRIOR FILING DATE: 1998-03-19  
NUMBER OF SEQ ID NOS: 11  
SOFTWARE: FastSeq for Windows Version 3.0  
SEQ ID NO 11  
LENGTH: 44  
TYPE: PRT  
ORGANISM: human  
US-10-104-440-11

Query Match 100.0%; Score 129; DB 14; Length 44;  
Best Local Similarity 100.0%; Pred. No. 7,4e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERCTC 23  
Db 22 CCKNTDSRCKAROLELNERCTC 44

RESULT 3  
US-10-104-610-15

Sequence 15, Application US/10104610  
Publication No. US20030104532A1  
GENERAL INFORMATION:  
APPLICANT: KLAGSBRUN, Michael  
APPLICANT: SOKER, Shay  
APPLICANT: GAGNON, Michael L.  
TITLE OF INVENTION: SOLUBLE INHIBITORS OF VASCULAR ENDOTHELIAL GROWTH  
TITLE OF INVENTION: FACTOR  
FILE REFERENCE: 48801 C  
CURRENT APPLICATION NUMBER: US/10/104,610  
CURRENT FILING DATE: 2002-03-22  
PRIOR APPLICATION NUMBER: 09/580,989  
PRIOR FILING DATE: 2000-05-30  
PRIOR APPLICATION NUMBER: 60/069,155  
PRIOR FILING DATE: 1997-12-09  
PRIOR APPLICATION NUMBER: 60/069,687  
PRIOR FILING DATE: 1997-12-12  
NUMBER OF SEQ ID NOS: 24  
SOFTWARE: FastSeq for Windows Version 3.0  
SEQ ID NO 15  
LENGTH: 44  
TYPE: PRT  
ORGANISM: human  
US-10-104-610-15

Query Match 100.0%; Score 129; DB 15; Length 44;  
Best Local Similarity 100.0%; Pred. No. 7,4e-11;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERCTC 23  
Db 22 CCKNTDSRCKAROLELNERCTC 44

RESULT 4  
US-10-200-050-3

Sequence 3, Application US/10200050  
Publication No. US20030032145A1  
GENERAL INFORMATION:  
APPLICANT: Zloncheck, Thomas F.  
Deguzman, Gerilyn G.  
Keck, Rodney G.

TITLE OF INVENTION: VARIANTS OF VASCULAR ENDOTHELIAL CELL  
GROWTH FACTOR HAVING ALTERED PHARMACOLOGICAL PROPERTIES,  
AND RELATED ASPECTS THEREOF  
NUMBER OF SEQUENCES: 3  
CORRESPONDENCE ADDRESS:  
ADDRESSER: Flehr, Hohbach, Test, Albritton & Herbert  
STREET: Four Embarcadero Center, Suite 3400  
CITY: San Francisco  
STATE: California  
COUNTRY: United States  
ZIP: 94111-4187

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/10/200,050

FILING DATE: 19-Jul-2002

CLASSIFICATION: <Unknown>

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/08/802,052

FILING DATE: 14-FEB-1997

ATTORNEY/AGENT INFORMATION:

NAME: Vance, Dolly A.

REGISTRATION NUMBER: 39,054

REFERENCE/DOCKET NUMBER: A-64069/WHD/DAV

TELECOMMUNICATION INFORMATION:

TELEPHONE: (415) 781-1989

TELEFAX: (415) 398-3249

TELEX: 910 277299

INFORMATION FOR SEQ ID NO: 3:

SEQUENCE CHARACTERISTICS:

LENGTH: 165 amino acids

TYPE: amino acid

STRANDEDNESS: unknown

TOPOLOGY: unknown

MOLECULE TYPE: protein

SEQUENCE DESCRIPTION: SEQ ID NO: 3:

US-10-200-050-3

Query Match 100.0%; Score 129; DB 15; Length 165;  
Best Local Similarity 100.0%; Pred. No. 2,7e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CCKNTDSRCKAROLELNERCTC 23  
Db 137 CCKNTDSRCKAROLELNERCTC 159

RESULT 5  
US-09-813-398-8

Sequence 8, Application US/09813398  
Patent No. US20020169292A1  
GENERAL INFORMATION:

APPLICANT: Bruce D. Weintraub

APPLICANT: Mariusz W. Skudlinski

APPLICANT: University of Maryland

TITLE OF INVENTION: CYSTINE KNOT GROWTH FACTOR MUTANTS

FILE REFERENCE: DQFMD-003C1

CURRENT APPLICATION NUMBER: US/09/813,398

CURRENT FILING DATE: 2001-03-20

PRIOR APPLICATION NUMBER: PCT/US99/05908

PRIOR FILING DATE: 1999-03-19

PRIOR APPLICATION NUMBER: PCT/US98/19772

PRIOR FILING DATE: 1998-09-22

NUMBER OF SEQ ID NOS: 41

SOFTWARE: FastSeq for Windows Version 4.0

SEQ ID NO 8

LENGTH: 190

TYPE: PRT

ORGANISM: HOMO SAPIEN

US-09-813-398-8

```
Query Match          100.0%; Score 129; DB 10; Length 190;
Best Local Similarity 100.0%; Pred. No. 3,1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKARQLELNERTCR 23
        |||
Db      162 CSCKNTDSRCKARQLELNERTCR 184

RESULT 6
US-10-071-370A-2
; Sequence 2, Application US/10071370A
; Publication No. US20030045471A1
; GENERAL INFORMATION:
; APPLICANT: Bayne, Marvin L.
; APPLICANT: Conn, Gregory L.
; APPLICANT: Thomas, Jr., Kenneth A.
; TITLE OF INVENTION: VASCULAR ENDOTHELIAL CELL GROWTH FACTOR
; FILE REFERENCE: 18199CB
; CURRENT APPLICATION NUMBER: US/10/071,370A
; CURRENT FILING DATE: 2002-02-08
; PRIOR APPLICATION NUMBER: 09/326,879
; PRIOR FILING DATE: 1999-06-07
; PRIOR APPLICATION NUMBER: 09/038,199
; PRIOR FILING DATE: 1998-03-10
; PRIOR APPLICATION NUMBER: 08/299,185
; PRIOR FILING DATE: 1994-08-31
; PRIOR APPLICATION NUMBER: 08/000,834
; PRIOR FILING DATE: 1993-01-05
; PRIOR APPLICATION NUMBER: 07/586,638
; PRIOR FILING DATE: 1990-09-21
; NUMBER OF SEQ ID NOS: 29
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 2
; LENGTH: 190
; TYPE: PRT
; ORGANISM: rat
US-10-071-370A-2

Query Match          100.0%; Score 129; DB 15; Length 190;
Best Local Similarity 100.0%; Pred. No. 3,1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKARQLELNERTCR 23
        |||
Db      162 CSCKNTDSRCKARQLELNERTCR 184

RESULT 7
US-10-177-485-4
; Sequence 4, Application US/10177485
; Publication No. US20030108989A1
; GENERAL INFORMATION:
; APPLICANT: Ferrara, Napoleone
; APPLICANT: Leung, David Wei-Hung
; TITLE OF INVENTION: Production of Vascular Endothelial Cell Growth Factor
; FILE REFERENCE: P0586PIC9
; CURRENT APPLICATION NUMBER: US/10/177,485
; CURRENT FILING DATE: 2002-06-20
; PRIOR APPLICATION NUMBER: US 08/979,105
; PRIOR FILING DATE: 1997-11-26
; PRIOR APPLICATION NUMBER: US 08/749,709
; PRIOR FILING DATE: 1996-11-15
; PRIOR APPLICATION NUMBER: US 08/460,370
; PRIOR FILING DATE: 1995-06-02
; PRIOR APPLICATION NUMBER: US 08/410,378
; PRIOR FILING DATE: 1995-03-27
; PRIOR APPLICATION NUMBER: US 08/062,489
; PRIOR FILING DATE: 1993-05-13
; PRIOR APPLICATION NUMBER: US 07/772,399

; PRIOR FILING DATE: 1991-10-07
; PRIOR APPLICATION NUMBER: US 07/369,424
; PRIOR FILING DATE: 1989-06-21
; PRIOR APPLICATION NUMBER: US 07/351,117
; PRIOR FILING DATE: 1989-05-12
; NUMBER OF SEQ ID NOS: 9
; SEQ ID NO 4
; LENGTH: 190
; TYPE: PRT
; ORGANISM: Bovine
US-10-155-492-4

Query Match          100.0%; Score 129; DB 15; Length 190;
Best Local Similarity 100.0%; Pred. No. 3,1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKARQLELNERTCR 23
        |||
Db      162 CSCKNTDSRCKARQLELNERTCR 184

RESULT 8
US-10-155-492-4
; Sequence 4, Application US/10155492
; Publication No. US20030114374A1
; GENERAL INFORMATION:
; APPLICANT: Ferrara, Napoleone
; APPLICANT: Leung, David Wei-Hung
; TITLE OF INVENTION: Production of Vascular Endothelial Cell Growth Factor
; FILE REFERENCE: P0586PIC8
; CURRENT APPLICATION NUMBER: US/10/155,492
; CURRENT FILING DATE: 2002-05-24
; PRIOR APPLICATION NUMBER: US 08/901,544
; PRIOR FILING DATE: 1997-07-28
; PRIOR APPLICATION NUMBER: US 08/694,809
; PRIOR FILING DATE: 1996-08-09
; PRIOR APPLICATION NUMBER: US 08/410,378
; PRIOR FILING DATE: 1995-03-27
; PRIOR APPLICATION NUMBER: US 08/062,489
; PRIOR FILING DATE: 1993-05-13
; PRIOR APPLICATION NUMBER: US 07/772,399
; PRIOR FILING DATE: 1991-10-07
; PRIOR APPLICATION NUMBER: US 07/369,424
; PRIOR FILING DATE: 1989-06-21
; PRIOR APPLICATION NUMBER: US 07/351,117
; PRIOR FILING DATE: 1989-05-12
; NUMBER OF SEQ ID NOS: 9
; SEQ ID NO 4
; LENGTH: 190
; TYPE: PRT
; ORGANISM: Bovine
US-10-155-492-4

Query Match          100.0%; Score 129; DB 15; Length 190;
Best Local Similarity 100.0%; Pred. No. 3,1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CSCKNTDSRCKARQLELNERTCR 23
        |||
Db      162 CSCKNTDSRCKARQLELNERTCR 184

RESULT 9
US-09-349-954A-2
; Sequence 2, Application US/0934954A
; Patent No. US20020019027A1
; GENERAL INFORMATION:
; APPLICANT: Hayward, Nicholas K.
; APPLICANT: Weber, Gunther
; APPLICANT: Grimmond, Sean
; APPLICANT: No. US20020019027A1denskjold, Magnus
; APPLICANT: Laisson, Catharina
```

```
; TITLE OF INVENTION: A NOVEL GROWTH FACTOR AND A GENETIC SEQUENCE ENCODING
; FILE OF INVENTION: SAME
; FILE REFERENCE: DAY, COL. CAVE
; CURRENT APPLICATION NUMBER: US/09/349,954A
; CURRENT FILING DATE: 1999-07-08
; PRIOR APPLICATION NUMBER: 08/765,588
; PRIOR FILING DATE: 1996-02-22
; NUMBER OF SEQ ID NOS: 22
; SOFTWARE: Patentln Ver. 2.1
; SEQ ID NO 2
; LENGTH: 191
; TYPE: PRT
; ORGANISM: Nucleotide Sequence of VEGF165
US-09-349-954A-2

Query Match          100.0%; Score 129; DB 9; Length 191;
Best Local Similarity 100.0%; Pred. No. 3.1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CCKNTDSRCKAROLELNERTCR 23
      |||
Db      163 CCKNTDSRCKAROLELNERTCR 185

RESULT 10
US-09-932-451A-2
; Sequence 2, Application US/09932451A
; Patent No. US2002011324A1
; GENERAL INFORMATION:
; APPLICANT: OZAMA, Keiya
; APPLICANT: SHIMPO, Masahisa
; APPLICANT: IKEDA, Uichi
; APPLICANT: MAEDA, Yoshiyazu
; APPLICANT: SHIMADA, Kazuyuki
; TITLE OF INVENTION: ADENO-ASSOCIATED VIRUS-MEDIATED DELIVERY OF ANGIOGENIC
; TITLE OF INVENTION: FACTORS
; FILE REFERENCE: 0800-0026
; CURRENT APPLICATION NUMBER: US/09/932,451A
; CURRENT FILING DATE: 2001-08-17
; PRIOR APPLICATION NUMBER: 60/226,056
; PRIOR FILING DATE: 2000-08-17
; NUMBER OF SEQ ID NOS: 2
; SOFTWARE: Patentln Ver. 2.0
; SEQ ID NO 2
; LENGTH: 191
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: VEGF-165
US-09-932-451A-2

Query Match          100.0%; Score 129; DB 10; Length 191;
Best Local Similarity 100.0%; Pred. No. 3.1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CCKNTDSRCKAROLELNERTCR 23
      |||
Db      163 CCKNTDSRCKAROLELNERTCR 185

RESULT 11
US-09-907-007-2
; Sequence 2, Application US/09907007
; Patent No. US20020142395A1
; GENERAL INFORMATION:
; APPLICANT: Hayward, Nicholas K.
; APPLICANT: Weber, Gunther
; APPLICANT: Grimmond, Sean
; APPLICANT: No. US20020142395A1denskjold, Magnus
; APPLICANT: Larsson, Catharina
; TITLE OF INVENTION: A NOVEL GROWTH FACTOR AND A GENETIC SEQUENCE ENCODING
; TITLE OF INVENTION: SAME
; FILE REFERENCE: DAVIES
```

```
; CURRENT APPLICATION NUMBER: US/09/907,007
; CURRENT FILING DATE: 2001-07-17
; PRIOR APPLICATION NUMBER: 08/765,588
; PRIOR FILING DATE: 1996-02-22
; NUMBER OF SEQ ID NOS: 22
; SOFTWARE: Patentln Ver. 2.1
; SEQ ID NO 2
; LENGTH: 191
; TYPE: PRT
; ORGANISM: Nucleotide Sequence of VEGF165
US-09-907-007-2

Query Match          100.0%; Score 129; DB 10; Length 191;
Best Local Similarity 100.0%; Pred. No. 3.1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CCKNTDSRCKAROLELNERTCR 23
      |||
Db      163 CCKNTDSRCKAROLELNERTCR 185

RESULT 12
US-09-795-006A-2
; Sequence 2, Application US/09795006A
; Patent No. US20020151680A1
; GENERAL INFORMATION:
; APPLICANT: Allitalo et al
; TITLE OF INVENTION: MATERIALS AND METHODS INVOLVING HYBRID VASCULAR
; FILE REFERENCE: 28967/35977B
; CURRENT APPLICATION NUMBER: US/09/795,006A
; CURRENT FILING DATE: 2001-02-26
; PRIOR APPLICATION NUMBER: US 60/205,331
; PRIOR FILING DATE: 2000-05-18
; PRIOR APPLICATION NUMBER: US 60/185,205
; PRIOR FILING DATE: 2000-02-25
; NUMBER OF SEQ ID NOS: 175
; SOFTWARE: Patentln Ver. 2.0
; SEQ ID NO 2
; LENGTH: 191
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-795-006A-2

Query Match          100.0%; Score 129; DB 10; Length 191;
Best Local Similarity 100.0%; Pred. No. 3.1e-10;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1 CCKNTDSRCKAROLELNERTCR 23
      |||
Db      163 CCKNTDSRCKAROLELNERTCR 185

RESULT 13
US-09-870-759-122
; Sequence 122, Application US/09870759
; Patent No. US20020177551A1
; GENERAL INFORMATION:
; APPLICANT: TERNAN, David S
; TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC DISEASE
; FILE REFERENCE: 870759
; CURRENT APPLICATION NUMBER: US/09/870,759
; CURRENT FILING DATE: 2002-01-14
; PRIOR APPLICATION NUMBER: US 60/208,128
; PRIOR FILING DATE: 2000-05-30
; NUMBER OF SEQ ID NOS: 166
; SOFTWARE: Patentln version 3.1
; SEQ ID NO 122
; LENGTH: 191
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-870-759-122
```

Query Match 100.0%; Score 129; DB 10; Length 191;  
Best Local Similarity 100.0%; Pred. No. 3.1e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKARQLELNERTCR 23  
|||||  
DB 163 CSCKNTDSRCKARQLELNERTCR 185

RESULT 14

US-09-751-708A-122  
; Sequence 122, Application US/09751708A  
; Publication No. US20030157113A1  
; GENERAL INFORMATION:

; APPLICANT: TERMAN, David S  
; TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC DISEASE  
; FILE REFERENCE: 751/08  
; CURRENT APPLICATION NUMBER: US/09/751,708A  
; CURRENT FILING DATE: 2002-10-15  
; PRIOR APPLICATION NUMBER: US 60/173,371  
; PRIOR FILING DATE: 1999-12-28  
; NUMBER OF SEQ ID NOS: 166  
; SOFTWARE: PatentIn version 3.1  
; SEQ ID NO 122  
; LENGTH: 191  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
US-09-751-708A-122

Query Match 100.0%; Score 129; DB 12; Length 191;  
Best Local Similarity 100.0%; Pred. No. 3.1e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKARQLELNERTCR 23  
|||||  
DB 163 CSCKNTDSRCKARQLELNERTCR 185

RESULT 15

US-10-083-817-3  
; Sequence 3, Application US/10083817  
; Publication No. US20020193288A1  
; GENERAL INFORMATION:  
; APPLICANT: Schreiner, George F.  
; APPLICANT: Johnson, Richard J.  
; TITLE OF INVENTION: METHODS OF TREATING HYPERTENSION AND  
; FILE REFERENCE: SCIOS.002C1  
; CURRENT APPLICATION NUMBER: US/10/083,817  
; CURRENT FILING DATE: 2002-02-26  
; PRIOR APPLICATION NUMBER: 60/099,694  
; PRIOR FILING DATE: 1998-09-09  
; PRIOR APPLICATION NUMBER: 09/392,932  
; NUMBER OF SEQ ID NOS: 11  
; SOFTWARE: FastSeq for Windows Version 4.0  
; SEQ ID NO 3  
; LENGTH: 191  
; TYPE: PRT  
; ORGANISM: Homo Sapien  
US-10-083-817-3

Query Match 100.0%; Score 129; DB 14; Length 191;  
Best Local Similarity 100.0%; Pred. No. 3.1e-10;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 CSCKNTDSRCKARQLELNERTCR 23  
|||||  
DB 163 CSCKNTDSRCKARQLELNERTCR 185

Search completed: September 12, 2003, 10:49:03  
Job time : 320 secs

**THIS PAGE BLANK (USPTO)**